

# Sacramento Groundwater Authority Conjunctive Use Program—San Juan Family/ North Central Group Project

---

## 1. Project Description

<b><i>Project Type:</i></b>	Conjunctive water management
<b><i>Location:</i></b>	Service areas of the San Juan Family (San Juan Water District [San Juan], Citrus Heights Water District [Citrus Heights], Fair Oaks Water District [Fair Oaks], and Orange Vale Water Company [Orange Vale]) and the North Central Group (Northridge Water District [Northridge], McClellan Air Force Base [McClellan AFB], Arcade Water District – North Highlands Service Area [Arcade – NH], Citizens Water Resources [Citizens], and Rio Linda/Elverta Community Water District [Rio Linda/Elverta])
<b><i>Proponent(s):</i></b>	Sacramento Groundwater Authority (SGA, formerly known as the Sacramento North Area Groundwater Management Authority)
<b><i>Project Beneficiaries:</i></b>	ACID, downstream users, the environment, the Sacramento-San Joaquin Delta
<b><u>Total Project Components:</u></b>	Short-term components, expansion of Peterson Water Treatment Plant (WTP), construction of 21 wells
<b><i>Potential Supply:</i></b>	21,000 acre-feet per year (ac-ft/yr)
<b><i>Cost:</i></b>	\$107.7 million
<b><i>Current Funding:</i></b>	None
<b><u>Short-term Components:</u></b>	Utilize existing facilities with construction of two wells and extension of Walerga Pipeline
<b><i>Potential Supply (by 2003):</i></b>	12,500 ac-ft/yr
<b><i>Cost:</i></b>	\$8.3 million
<b><i>Current Funding:</i></b>	None
<b><i>Implementation Challenges:</i></b>	Coordination of transfer program with operation of projects; financing; institutional arrangements among SGA, member agencies, potential transfer partners

**Key Agencies:**

**U.S. Bureau of Reclamation (USBR), National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), California Department of Water Resources (DWR), SGA Members, environmental interest groups**

**Summary**

Over the past several decades, the water supplies of Placer County and Sacramento County have been impacted by the following, while demand for water in the region has continued to grow:

- Prolonged drought
- Increasing pressure to dedicate surface water for environmental purposes
- Declining groundwater levels (see Figure 17A-1 for evidence of the persistent groundwater cone of depression underlying the region)
- Growing threats to surface water and groundwater quality

To address these problems, water purveyors in southern Placer County and northern Sacramento County formed the American River Basin Cooperating Agencies (Cooperating Agencies - see Figure 17A-2 for locations of the water purveyors) and initiated work on implementation of the regional conjunctive use program envisioned by the Sacramento-Area Water Forum (Water Forum)<sup>1</sup>. The objective of this effort, referred to as the Regional Water Master Plan (RWMP), is development of equitable, cost-effective water resource management strategies for enhancing water supply reliability and operational flexibility for water users of Folsom Lake, the lower American River, and the connected groundwater basin.

The Cooperating Agencies largely comprise the same water purveyors that make up the SGA, the joint powers authority (JPA) charged with the protection and regulation of the groundwater basin underlying the service areas of the Cooperating Agencies (the boundaries of the SGA are shown on Figures 17A-1 and 17A-2). The SGA was formed pursuant to the recommendation of the Water Forum. The SGA is currently developing and implementing a groundwater management program that incorporates both the RWMP and the Water Forum Agreement.

The goals and objectives of the Cooperating Agencies and the SGA are fully compatible. Consequently, the two organizations formed a “partnership” to coordinate development

---

<sup>1</sup> Begun in 1993, the Sacramento Area Water Forum comprises representatives from the business, environmental, public interest, and water purveyor communities (including the Cooperating Agencies). The co-equal objectives of the group are (1) to provide a reliable and safe water supply for the region’s economic health and planned development through the year 2030, and (2) to preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River. After a 6-year, consensus-based, stakeholder process, the Water Forum completed the “Water Forum Agreement,” which prescribes a regional conjunctive use program for the lower American River and the connected groundwater basin. In addition, the Water Forum completed an “Environmental Impact Report (EIR) for the Water Forum Proposal” (State of California Clearinghouse Number 95082041). That document was certified by the two lead agencies (the City of Sacramento and the County of Sacramento) in December 1999.

and implementation of the regional water resources management strategies identified in the RWMP as cost-effectively and efficiently as possible<sup>2</sup>.

Upon completion of the RWMP (August 2001), the Cooperating Agencies will sunset as an organization and the SGA will continue the Partnership's mission. This will occur in conjunction with the newly formed Regional Water Authority (RWA), a JPA charged with serving and representing the regional water supply interests of its members of protecting the reliability, availability, and quality of resources. Membership in the SGA and the RWA are similar.

## **Opportunities for Conjunctive Use**

The nexus of current levels of groundwater development, substantial surface water rights and contract entitlements, and the potential for integrated operation of Folsom Lake with the local groundwater basin presents an opportunity for a regional conjunctive use program in northern Sacramento County and southern Placer County. Implementation of the water resource management strategies currently under investigation by the SGA will also provide statewide water supply benefits.

The local conjunctive use program prescribed by the Water Forum Agreement facilitates exercise of the local groundwater basin through a regional conjunctive use program<sup>3</sup>. Further, although the Water Forum Agreement is based on projected year 2030 water demands, the opportunity exists to exercise the surface water forbearance pattern identified in the plan immediately. Such an operation has been referred to in the RWMP as "Early Implementation" of the Water Forum Agreement. "Early Implementation" does not require construction of facilities that would not be required under the local conjunctive use program prescribed by the Water Forum Agreement – it only requires operational changes by certain Cooperating Agencies earlier than anticipated under the Water Forum Agreement.

When surface water is available (during "wet years"), surface water diversions from either or both the American and Sacramento rivers will be stored in the groundwater aquifer underlying northern Sacramento County and southern Placer County through either in lieu or direct recharge. When surface water diversions are restricted (during "dry years"), stored groundwater will be extracted for local use in lieu of surface water diversions, thereby freeing that surface water for other purposes. For example, surface water made available by such an exchange may be left in project reservoirs (e.g., Folsom Lake or Shasta Lake) for temperature control and recreational purposes, or may be released to the lower American River or the Sacramento River. The water supply yield of such a program may satisfy a variety of purposes including increased dry-year Delta export, improvement of Bay-Delta water quality, or enhancement of in-stream flows for environmental purposes. Such a program is in alignment with the CALFED Record of Decision (ROD).

---

<sup>2</sup> The Cooperating Agencies/SGA partnership encompasses water users in both Sacramento County and Placer County including: Arcade Water District, Carmichael Water District, Citizens Water Resources, Citrus Heights Water District, City of Folsom, City of Roseville, City of Sacramento, County of Sacramento, Del Paso Manor Water District, Fair Oaks Water District, Natomas Central Mutual Water Company, Northridge Water District, Orange Vale Water Company, Placer County Water Agency, Rio Linda/Elverta Community Water District, Southern California Water Company, San Juan Water District, and individual representatives from agriculture and self-supplied groundwater users (principally parks and recreation districts).

<sup>3</sup> The surface water forbearance pattern prescribed by the Water Forum Agreement to provide for in-stream flows in the lower American River, coupled with the reservation of the ownership of that surface water at the confluence with the Sacramento River, constitutes the exchange portion of the program. The maintenance of an operational yield of the groundwater basin constitutes the banking portion of the program.

SGA members have taken the initial steps to develop and implement a comprehensive groundwater and surface water conjunctive use program within the framework established by the regional Water Forum Agreement. SGA members have extensive surface water rights and entitlements and have invested millions of dollars in water diversion, treatment, and conveyance facilities that would be essential elements for delivering surface water to areas that historically have depended upon groundwater. For example, San Juan, in cooperation with Citrus Heights, Fair Oaks, Orange Vale, and Northridge, has constructed the Cooperative Transmission Pipeline (CTP) to convey treated surface water diverted from Folsom Lake. Northridge has constructed the Northridge Transmission Pipeline (NTP) to convey surface water from the CTP into Northridge's service area to implement a conjunctive use groundwater stabilization program. These facilities represent a portion of the infrastructure necessary to implement the broader conjunctive use program that would not only enhance local water supplies and implement the Water Forum Agreement, but could make surface water supplies available for other uses as described above.

### **SGA Conjunctive Use Program**

The SGA conjunctive use program (Program) would be made possible through three principal projects involving SGA members:

- The San Juan Family/North Central Group Project
- The City of Sacramento/Arcade Water District-Area "D" Project
- The Placer County Water Agency/City of Sacramento Project

The SGA is the proponent of the aforementioned projects on behalf of the aforementioned member agencies. All SGA member agencies support these efforts. All proposed projects are shown graphically on Figure 17A-3.

In 2000, the SGA conducted a pilot conjunctive use program to demonstrate the viability of a conjunctive use project in the region. The pilot program, which involved banking (through in lieu recharge) and recovering (by diversion forbearance and exchange) 2,100 acre-feet (ac-ft) of water, included the U.S. Bureau of Reclamation (USBR) and the Sacramento Area Flood Control Agency (SAFCA) as partners.

The SGA is also investigating expanding the parameters of that pilot program. This effort is being funded in part by the CALFED Integrated Storage Investigation (ISI) Conjunctive Water Management Program. In support of a larger conjunctive use program, the SGA has also begun development of a groundwater monitoring network through the Data Management System (DMS) project. The ISI and the U.S. Army Corps of Engineers (COE) are both partially funding this project.

The SGA is also pursuing an arrangement with the Environmental Water Account (EWA) for implementation of an expanded pilot program. The expanded pilot program is designed to yield approximately 10,000 ac-ft of water per year. The SGA plans to expand this program to yield up to 25,000 ac-ft of water per year in the short term. Over the long term, the potential for even greater yields is possible. These expansions would require implementation of the aforementioned three principal projects. The long-term program is expected to contain both in lieu and direct recharge components.



In the near-term, the SGA's conjunctive use efforts can be implemented with existing infrastructure (with relatively minor operational changes). However, as water demands increase over time, and as the Program continues to expand, the additional system flexibility provided by expanded facilities would be required to increase yield. Additional infrastructure development and operational refinement would provide this flexibility and must be begun soon to avoid Program interruptions.

In addition to the regional benefits that would be realized, implementation of these larger efforts could also provide statewide water supply benefits, including increased dry-year Delta export, improvement of Bay-Delta water quality, or enhancement of in-stream flows for environmental purposes.

A detailed description of the San Juan Family/North Central Group Project (Project) is provided in subsequent sections.

### **Long-term Component of San Juan Family/North Central Group Project**

The primary purpose of this evaluation is to evaluate the potential for this project to provide water supply benefits in the short-term (by end of 2003). As part of this initial evaluation, potential long-term components of the proposed project (defined as any part of the project proceeding past or initiated after December 2003) have been considered on a conceptual level. Further consideration and technical evaluation of long-term component feasibility and cost will occur as the next level of review under the Sacramento Valley Water Management Agreement. Long-term-component project descriptions are included in these short-term project evaluations only as a guide to the reader to convey overall project intent.

#### **Operations**

This project would involve the San Juan Family (San Juan, Citrus Heights, Fair Oaks, and Orange Vale) and the North Central Group (Northridge, McClellan AFB, Arcade-NH, Citizens, and Rio Linda/Elverta).

In wet years, the North Central Group would utilize up to 29,000 ac-ft/yr of surface water to meet water demands in lieu of groundwater extraction. Surface water would be diverted from Folsom Lake, treated at San Juan's Sydney Peterson WTP, and delivered via the CTP and the NTP. The result would be "banked" groundwater available for future use. The San Juan Family would recover this stored groundwater when requested by a prospective banking and exchange partner.

When extracting groundwater, the San Juan Family would forbear diversion of up to 21,000 ac-ft/yr of surface water out of Folsom Lake, making that surface water available for other purposes. Historically, the North Central Group has met its entire water supply demand with groundwater. Because the individual agencies overlie the groundwater basin, use of surface water to meet their needs would result in both in lieu groundwater storage and direct recharge through deep percolation.

#### **Water Supply**

A surface water supply would be available to the North Central Group through Northridge's contract with Placer County Water Agency (PCWA) for the transfer of up to 29,000 ac-ft/yr of American River water. Sufficient demands exist within the PCWA/

Northridge transfer agreement's place of use (POU) for the entire 29,000 ac-ft to be banked in lieu for future extraction by Citrus Heights, Fair Oaks, and Orange Vale.

Historically, San Juan has used its American River water rights and contract entitlements to meet most of the water supply needs of its retail and wholesale customers (including Citrus Heights, Fair Oaks, and Orange Vale). These water rights and contract entitlements, totaling 82,200 ac-ft/yr, include:

- **Pre-1914 Water Right**—33,000 ac-ft/yr with a maximum diversion of 75 cubic feet per second (cfs)
- **CVP Contract Entitlement**—11,200 ac-ft/yr
- **PL 101-514 Contract Entitlement ("Fazio" water)**—13,000 ac-ft/yr
- **PCWA Transfer Agreement**—25,000 ac-ft/yr

When requested, Citrus Heights, Fair Oaks, and Orange Vale would forego a portion of their treated water sales contracts with San Juan and meet a portion of their customers' water demands through groundwater extraction. Sufficient demands exist within the San Juan service area for the use of up to 21,000 ac-ft of groundwater. However, the existing groundwater extraction capability of the three agencies is significantly less, and new extraction facilities would be required. The resulting impact to the groundwater basin would be mitigated by the aforementioned delivery of surface water to Northridge under the PCWA/Northridge transfer.

### **Regional Water Master Plan Analyses**

The potential for water storage and recovery via the Project was evaluated as part of the RWMP. The technical analyses performed through this process involved the use of surface water models, a groundwater model, and spreadsheet analyses. Much of the RWMP effort built upon the Water Forum analyses. Analyses were conducted for both an "Existing Condition" (1990 level of development) and a "Future Cumulative Condition" (2030 level of development). The simulation period included water years 1922 through 1991. PROSIM, CALSIM, and spreadsheet analyses were used to evaluate opportunities to transfer water as well as the Project's effects on surface water supplies and facilities operations. Groundwater conditions in Sacramento, Sutter, and Placer counties were simulated using the "three-county" Integrated Groundwater and Surface Water Model (IGSM).

### **Surface Water and Groundwater**

As part of the Project, the North Central Group would take delivery of surface water to meet all of its 2030 water needs and some of the needs of surrounding agencies. This would allow in lieu recharge of 29,000 ac-ft/yr. When requested, the San Juan Family would forego surface water diversions of up to 21,000 ac-ft/yr. This 21,000-acre-foot forbearance would be distributed on a pro-rata basis between three San Juan Family agencies:

- Citrus Heights—forbearance of 9,600 ac-ft/yr
- Fair Oaks—forbearance of 8,300 ac-ft/yr
- Orange Vale—forbearance of 3,300 ac-ft/yr

A forbearance of this magnitude is beyond that prescribed in the Water Forum Agreement.

During the simulation period (1922 through 1991), the average annual project yield is 7,800 ac-ft/yr. During an extended dry period (1928 through 1934), the average annual project yield is 18,000 ac-ft/yr.

The average annual net project recharge over the simulation period is estimated at 8,800 ac-ft/yr. Accounting for nonrecoverable losses of approximately 10 percent, the average annual net project recharge becomes 7,900 ac-ft/yr. For this analysis, nonrecoverable losses are assumed to be approximately 10 percent (e.g., stored groundwater that may not be available for later extraction because of migration or rejected recharge).

Per the Water Forum Agreement, the long-term sustainable yield of the groundwater basin is 131,000 ac-ft/yr. Under implementation of the following operational scenarios, the average annual groundwater extractions during the simulation period are:

- 128,000 ac-ft/yr in the “2030 Baseline” scenario (reflects the future condition, assuming implementation of water conservation but absent facilities and operations included in the Water Forum Agreement)
- 105,000 ac-ft/yr in the “2030 Water Forum Agreement” scenario (reflects the future condition, assuming implementation of the facilities and operations required for the regional conjunctive use program included in the Water Forum Agreement)
- 110,000 ac-ft/yr in the “2030 Program” scenario (reflects the future condition, assuming implementation of a regional conjunctive use program larger than that contemplated in the Water Forum Agreement<sup>4</sup>).

Elevation contours, difference contours, and hydrographs have been also produced to illustrate the response of the groundwater basin in Sacramento County and Placer County under implementation of the three 2030 operational scenarios. Figures 17A-4 through 17A-11 illustrate elevation contours for the 2030 Baseline Condition and the 2030 Water Forum Agreement, respectively. Figures 17A-12 through 17A-15 illustrate difference contours between the 2030 Program and 2030 Water Forum Agreement.

Of particular note is the stabilization of the cones of depression in both Sacramento County and Placer County in both wet years and dry years under the 2030 Water Forum Agreement and 2030 Program. A consequence of this stabilization is that the ongoing groundwater remediation at McClellan AFB should not be impacted. Additionally, the groundwater gradients (direction and magnitude) at the Aerojet site south of the American River should not be impacted significantly. Consequently, implementation of the 2030 Water Forum Agreement and 2030 Program should not induce further migration of contaminants.

As expected, since the principal consequence of this Project is increased groundwater use by the San Juan Family in certain years, there are some impacts to the basin along the eastern fringe of the groundwater basin. In comparison to the 2030 Water Forum Agreement, groundwater levels are lower in dry years. However, the groundwater basin recovers in wet years.

---

<sup>4</sup> This scenario is based on preliminary model simulations and reflects one manner in which the basin could be operated. The forbearances included in this scenario are similar to those discussed in the three SGA long-term projects and are dependent upon other system conditions, operational parameters, and assumptions.

## **Water Quality**

The Peterson WTP produces water that meets all current Title 22 drinking water standards. The groundwater supplies in Citrus Heights, Fair Oaks, Orange Vale, and the North Central Group agencies also meet all current drinking water standards. These agencies are expected to remain in compliance with the standards.

## **Facilities**

The RWMP also included an evaluation of the additional facilities required for implementation of this Project and the associated costs. This evaluation was based on an analysis of the existing facilities and operations. The facility requirements were calculated using Maximum-day Demand (MDD) and assumed seasonal/hydrologic fluctuations. Because it was a planning-level analysis, the manner in which each agency would meet Peak-hour Demand (PHD) was not investigated. Agencies currently meet PHD with a combination of aboveground storage and groundwater extraction. The analysis assumed only surface water and groundwater would be used to meet demands. Use of other supplemental supplies (e.g., short-term demand management and recycled water) was not considered.

To evaluate the capacity of existing facilities, and to estimate the size of additional facilities required to implement this Project, the MDDs for each agency under wet year and dry year were used, as summarized in Table 17A-1. For evaluating the capacity of surface water treatment and conveyance facilities, the wet-year surface water demands imposed the most stringent condition. For evaluating the capacity of groundwater extraction facilities, the dry-year groundwater demands imposed the most stringent condition.

## **Surface Water Treatment/Conveyance**

The Peterson WTP's current capacity of 108 million gallons per day (mgd) would be insufficient to meet the 2030 wet year MDD of 112 mgd for the San Juan Family and the 52mgd for the North Central Group. To implement the Project, the Peterson WTP would need to be expanded to provide a reliable treatment capacity of approximately 170 mgd.

The main transmission network (CTP/NTP) has sufficient capacity to meet the 2030 wet-year surface water MDD for the San Juan Family (164 mgd of capacity) and the North Central Group (59 mgd of capacity).

Extension of the Walerga Pipeline would allow Northridge to serve more of its district (and portions of other North Central Group agencies) with surface water, thereby increasing the potential for in lieu recharge.

## **Groundwater Extraction Facilities**

Under the Project, Citrus Heights, Fair Oaks, Orange Vale, and Rio Linda/Elverta must construct additional wells to meet 2030 dry-year MDD for groundwater. Assuming a typical well of 1,500-gpm capacity, 21 new wells must be constructed within the following agencies' boundaries:

- Orange Vale—1 well
- Citrus Heights—6 wells
- Fair Oaks—3 wells
- Rio Linda/Elverta—11 wells

**TABLE 17A-1**  
Maximum-day Demands for the San Juan Family/North Central Group Project  
*Sacramento Groundwater Authority Conjunctive Use Program—San Juan Family/ North Central Group Project*

Agency	Max Day Demand (mgd)	Demand Breakout							
		Wet Year				Dry Year			
		Surface Water		Groundwater		Surface Water		Groundwater	
		%	mgd	%	mgd	%	mgd	%	mgd
San Juan	45.0	100	45.0	0	0.0	100	45.0	0	0.0
Citrus Heights	29.3	100	29.3	0	0.0	41	12.1	59	17.2
Fair Oaks	25.4	100	25.4	0	0.0	42	10.6	58	14.8
Orange Vale	12.0	100	12.0	0	0.0	50	6.0	50	6.0
Northridge	34.8	100	34.8	0	0.0	0	0.0	100	34.8
Arcade–NH	9.3	100	9.3	0	0.0	0	0.0	100	9.3
Citizens	35.5	14	5.0	86	30.5	0	0.0	100	35.5
Rio Linda/Elverta	33.4	0	0.0	100	33.4	0	0.0	100	33.4
McClellan AFB	2.7	100	2.7	0	0.0	0	0.0	100	2.7
<b>Total</b>	<b>227.4</b>	<b>--</b>	<b>163.5</b>	<b>--</b>	<b>63.9</b>	<b>--</b>	<b>73.7</b>	<b>--</b>	<b>153.7</b>

## Short-term Component of San Juan Family/North Central Group Project

Implementing the Project at its full capacity would require additional infrastructure, including a 60-mgd expansion of the Peterson WTP, the construction of 21 new wells, and extending the Walerga Pipeline. In the short-term, the Project can be partially implemented prior to construction of all of the additional infrastructure.

### Surface Water and Groundwater

This short-term component would yield up to 12,500 ac-ft of water per year. In wet years, the North Central Group would utilize up to 14,000 ac-ft of surface water to meet water demands in lieu of groundwater extraction. This water would be treated at the Peterson WTP and delivered via the CTP/NTP. The San Juan Family would recover this stored groundwater, minus losses, in dry years. When extracting groundwater, the San Juan Family would forgo diversion of up to 12,500 ac-ft of surface water out of Folsom Lake, making that surface water available for other purposes.

This 12,500-acre-foot forbearance would be distributed on a pro-rata basis between two San Juan Family agencies:

- Citrus Heights—forbearance of 6,700 acre-feet per year
- Fair Oaks—forbearance of 5,800 acre-feet per year

During the simulation period (1922 through 1991), the average annual yield is 4,600 acre-feet per year. During an extended dry period (1928 through 1934), the average annual yield is 10,700 acre-feet per year.

The average annual net project recharge over the simulation period is estimated at 3,400 acre-feet per year. Accounting for nonrecoverable losses of approximately 10 percent, the average annual net project recharge becomes 3,100 acre-feet per year. For this analysis, nonrecoverable losses are assumed to be approximately 10 percent.

For an aggregate of all of the short-term components (all SGA projects), the average annual groundwater extraction during the simulation period is 115,000 acre-feet per year. This is less than the Water Forum Agreement's long-term sustainable yield of the groundwater basin (131,000 acre-feet per year).

Elevation contours, difference contours, and hydrographs have been also produced to illustrate the response of the groundwater basin in Sacramento County and Placer County under implementation of an aggregate of all of the short-term components (see Figures 17A-16 through 17A-19). The response is similar to that of the 2030 Program. As expected, since the principal consequence of this Project is increased groundwater use by the San Juan Family in certain years, there are some impacts to the basin along the eastern fringe of the groundwater basin. In comparison to the 2030 Water Forum Agreement, groundwater levels are lower in dry years. However, the groundwater basin essentially recovers in wet years.

### **Facilities**

Implementing the short-term component would require additional infrastructure, including: the construction of two wells (one in Fair Oaks and one in Citrus Heights) and the extension of the Walerga Pipeline. Sufficient capacity exists at the Peterson WTP to treat surface water for both the San Juan Family and the North Central Group (the short-term portion only).

## **2. Potential Project Benefits/Beneficiaries**

### **Water Supply Benefits**

The Project would eventually yield up to 21,000 acre-feet per year. The average annual yield is estimated at 7,800 acre-feet per year in the RWMP analyses. The SGA could partner with federal, state, and/or local agencies for the disposition of this yield.

The Project is also expected to result in an average annual net project recharge of 7,900 ac-ft (after accounting for potential losses). This would provide regional benefits to all SGA member agencies adjacent to the cone of depression that utilize groundwater. These benefits may include greater available supply and reduced groundwater extraction pumping costs.

The short-term component would yield up to 12,500 acre-feet per year. The average annual yield is estimated at 4,600 acre-feet per year in the RWMP analyses. The SGA could partner with federal, state, and/or local agencies for the disposition of this yield.

The short-term component is also expected to result in an average annual net project recharge of 3,100 acre-feet per year (after accounting for potential losses). This would provide regional benefits to all SGA member agencies adjacent to the cone of depression that utilize groundwater. These benefits may include greater available supply and reduced groundwater extraction pumping costs.

## **Dry-year Delta Exports**

Within the context of the CALFED ROD, the Project's yield could be used in a dry year transfer program to augment Delta exports.

Because of the nature and extent of the groundwater basin underlying the Cooperating Agencies, the Project provides the ability to put water in the system through forbearance of surface water diversion on nearly an on-call basis during any week, month, or season of need. This would be accomplished by having members of the Cooperating Agencies that could have taken surface water extract groundwater instead. This flexibility would allow the SGA to move water into and through the Delta, taking advantage of "windows" in the Delta export restrictions and flow requirements.

## **Bay-Delta Water Quality**

The Project's yield could also be used to improve the quantity and quality of Delta outflow. The flexibility of the Project (see above) would allow the SGA to put water in the system for the Delta when needed. In addition, the travel time from Folsom Lake to the Delta is considerably shorter than from other state and federal reservoirs.

In addition, releases from Folsom Lake reach the Delta in less time than from most other reservoirs (both state and federal). This shorter travel time would allow the SGA to be more responsive to in-Delta needs.

## **Environmental Benefits**

The flexibility of the Project (see above) would allow the SGA to put water in the system for environmental purposes when needed. Once in the system, this water would provide extensive aquatic, terrestrial, and ecological benefits both in-stream and to the Delta. In particular, releases from Folsom Lake through this program may improve conditions in the American River including in-stream flows augmentation, temperature reduction, water quality improvement, and recreational, fishery, and riparian benefits. Conditions may also improve in the Sacramento River (downstream of its confluence with the American River).

## **3. Project Costs**

The cost opinions shown, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation from the information available at the time of the estimate. It is normally expected that cost opinions of this type, an order-of-magnitude cost opinion, would be accurate within +50 to -30 percent. Project costs were developed at a conceptual level only, using data such as cost curves and comparisons with bid tabs and vendor quotes for similar projects. The costs were not based on detailed engineering design, site investigations, and other supporting information that would be required during subsequent evaluation efforts.

The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors. As a result, the final project costs will vary from the opinions presented here. Because of these factors, project feasibility, benefit/cost ratios, risks, and funding needs

must be carefully reviewed prior to making specific financial decisions or establishing project budgets to help ensure proper project evaluation and adequate funding.

The RWMP analyses also included planning-level estimates of project costs for both the overall Project and the short-term component. The probable capital costs associated with expanding the Peterson WTP to 170 mgd, constructing 21 additional wells, and extending the Walerga Pipeline are summarized in Table 17A-2. The probable capital costs associated with the short-term component only are summarized in Table 17A-3.

At a planning level of analysis, typical annual operations and maintenance (O&M) costs for a project of this nature are approximately 3 percent of probable capital costs. Annual O&M costs include incidental replacement, but do not include a replacement sinking fund. Because of the current volatility of the power market, energy costs cannot be quantified with reasonable certainty and are not included. Annual O&M costs may approach \$3.7 million per year for the overall Project and \$200,000 for the short-term component.

**TABLE 17A-2**  
Probable Capital Cost for the San Juan Family/North Central Group Project  
*Sacramento Groundwater Authority Conjunctive Use Program—San Juan Family/ North Central Group Project*

Item	Quantity	Unit	Cost per Unit (\$)	Extended Cost (\$)
Walerga Pipeline Extension (36")	8,700	linear feet	450	3,900,000
Peterson WTP Upgrade	62	mgd	800,000	49,600,000
Groundwater Extraction Wells	21	well	600,000	12,600,000
<b>Subtotal</b>				<b>66,100,000</b>
Contingency @ 25%				16,500,000
<b>Opinion of Probable Construction Cost</b>				<b>82,600,000</b>
Engineering, construction management, and administrative @ 20%				16,500,000
Environmental documentation, permitting, and mitigation @ 5%				4,100,000
Legal @ 5%				4,100,000
Right of Way / Land Purchase				200,000
<b>Opinion of Probable Capital Cost</b>				<b>107,700,000</b>



**TABLE 17A-3**

Probable Capital Cost for the Short-term Component of the San Juan Family/North Central Group Project  
*Sacramento Groundwater Authority Conjunctive Use Program—San Juan Family/ North Central Group Project*

Item	Quantity	Unit	Cost per Unit (\$)	Extended Cost (\$)
Walerga Pipeline Extension (36")	8,700	Linear feet	450	3,900,000
Peterson WTP Upgrade	0	mgd	800,000	0
Groundwater Extraction Wells	2	Well	600,000	1,200,000
<b>Subtotal</b>				<b>5,100,000</b>
Contingency @ 25%				1,300,000
<b>Opinion of Probable Construction Cost</b>				<b>6,400,000</b>
Engineering, construction management, and administrative @ 20%				1,300,000
Environmental documentation, permitting, and mitigation @ 5%				300,000
Legal @ 5%				300,000
Right-of-way/Land Purchase				0 <sup>a</sup>
<b>Opinion of Probable Capital Cost</b>				<b>8,300,000</b>

<sup>a</sup>Values rounded to nearest \$100,000. Right-of-way/Land Purchase estimated at \$20,000.

## Initial Funding Requirements and Sources

The SGA has received funding for several elements of the conjunctive use program including:

- Continued investigation of conjunctive use opportunities – from ISI
- DMS – from ISI, COE, and SGA members
- Groundwater recharge feasibility studies – through Proposition 13 (the SGA was notified of its selection for funding, but the funds have not yet been released)

The SGA is also pursuing an arrangement with the EWA for implementation of an expanded pilot program.

The funds received to date are not designated for the actual construction of facilities to implement conjunctive use activities or the associated environmental, legal, and institutional requirements. Absent additional outside revenue sources, SGA members would fund construction of facilities in their districts through revenues collected from transfer activities and from their ratepayers. It is the SGA members' intent to enter into a water transfer contract with another agency (or agencies), generating revenue to partially offset investments (both past and future) in infrastructure that make the conjunctive use program possible.

To fund a portion of the short-term component, the SGA intends to apply for Proposition 13 funds for Groundwater Storage Construction Grants. The next funding cycle is expected to begin in late 2001.

## 4. Environmental Issues

Implementation of the overall Program, the Project, and the short-term component are not anticipated to involve extensive environmental issues. The surface water and groundwater usage under these activities is within the parameters (i.e., water balance) of the Water Forum EIR. The cumulative impact analyses conducted for that document considered impacts on both the American River and the Sacramento River at year 2030 system-wide demands. Consequently, the SGA's activities could potentially tier off the Water Forum EIR for the "water-side" impacts.

Further, the additional and expanded infrastructure required for the Project and the short-term component would be centered largely in urbanized areas, therefore the "land-side" impacts would also be limited. Thus, the environmental documentation requirements for the B/E opportunities currently being developed should be minimal. The overall Program, however, would require substantial new infrastructure and have different environmental documentation, likely to be a Mitigated Negative Declaration.

Implementation of the project would also require issuance of permits from various regulatory agencies. Following is a summary of the likely permitting requirements. Additional permitting requirements may be identified pending further project refinement.

- **State Water Resources Control Board**—Applications for new water rights and changes in point of diversion would be required.
- **Regional Water Quality Control Board**—Large amounts of earthwork would be required for the recharge basins. Depending upon project configuration and location, Water Quality Certification under the federal Clean Water Act may be required for construction.
- **Federal and State Endangered Species Act**—Consultation with state and federal resource agencies (e.g., USFWS, NMFS, CDFG) may be required to protect special-status species and their habitat.
- **U.S. Army Corps of Engineers (COE)** The project may affect wetland habitat and require a permit for discharge of dredged or fill material pursuant to Section 404 of the federal Clean Water Act.
- **State Lands Commission**—Project would need to consult with State Lands Commission on the public agency lease/encroachment permitting for use of state lands.
- **Advisory Council on Historic Preservation**—Consultation under Section 106 of the National Historic Preservation Act may be necessary if historical resources are affected by construction of the project.
- **California Department of Fish and Game**—If alterations to streams or lakes are required as part of project implementation, a Streambed or Lakebed Alteration Agreement may be required.
- **Local governments and special districts**—Specific agreements for rights-of-way, encroachments, use permits, or other arrangements may need to be made with local entities in the vicinity of the project.

A draft California Environmental Quality Act (CEQA) environmental checklist has been prepared for this proposed project and is included as an attachment to this evaluation. The checklist provides a preliminary assessment of the environmental areas of concern, as well as areas that are not likely to be of concern, associated with this project. The checklist would be finalized as part of the environmental compliance required for project implementation.

## **5. Implementation Challenges**

The project implementation would occur in several incremental stages, each of which would have significant challenges. Many of these challenges would be inherent to any project of this size and complexity. The following lists some of the implementation challenges anticipated to be associated with this project.

### **Public Perception**

Landowners have significant concern regarding possible groundwater overdraft. While the aquifer recharge aspects of this project may go a long way to alleviate these concerns, overdraft likely would remain a concern throughout the various stages of this project from feasibility analysis through construction and very likely continue thereafter. Monitoring and modeling of groundwater levels would not only be an essential part of this project technically, but also politically. Further, public concern accompanies any water delivery project during these water-tight times with regard to whom any project may or, just as importantly, may not benefit. As a result, many counties have passed ordinances and set numerous groundwater management objectives. To that end, the county has set strict guidelines for such water management programs as water transfers that dictate the priority of transfers taking into consideration primarily the intended recipient of the water.

### **Coordination among Public and Private Entities**

Strong coordination would be required among local, state, and federal entities such as USFWS, USBR, and DWR. The governmental agencies would have strong interests associated directly with the project and indirectly as it may affect other interests in the area. It is highly probable that because of the complexity and far-reaching implications of the project that competing interest may arise. Reliable communication and integrated coordination would be required to create a successful project.

### **Coordination between Concurrent Projects**

Numerous parties are examining similar projects throughout the valley. To optimize the effectiveness of these projects, coordination between the projects would be required from the onset. The strongest motivation for such an effort is three-fold: (1) to avoid duplication of effort and as a result efficiently utilize available funds, (2) to avoid the nullification of project benefits through competing projects, and perhaps most importantly, (3) to optimize the benefits of these projects to the watershed.

### **Lack of Sufficient Groundwater Data**

In many areas, there is limited groundwater information available, or the information that is available is unreliable.

## Environmental Regulatory Compliance

Extensive environmental documentation, surveying, monitoring, and permitting would be required for this project. Habitat for known Endangered Species Act (ESA)-listed species such as the valley elderberry longhorn beetle and the giant garter snake is present within the project area. Project scheduling would have to reflect environmental regulatory requirements including any limitation on windows of construction.

## Land Acquisition

It is probable that land would have to be acquired for the production wells and conveyance systems. Some landowners may be resistant to the land purchases.

## 6. Implementation Plan

Phase 2 of the RWMP resulted in the development of an overall Program concept, a conceptual facilities plan, a preliminary institutional/economic/contractual framework for implementing the Program and associated projects, and the associated technical underpinnings (e.g., Water Forum Agreement compliance, surface and groundwater modeling and analyses, water quality analyses, identification and evaluation of required facilities, evaluation of required operational changes, and estimation of costs). Implementation of the long-term Program, the Project, and the short-term component would require the completion of additional tasks, including:

- Hydrologic modeling to evaluate a range of storage/recovery scenarios and their effects on groundwater conditions. Effects of regulatory requirements (e.g., “Term 91,” refill criteria, Delta water quality and export restrictions) would also be evaluated.
- Analysis of water rights and/or contract entitlements.
- Identification of additional infrastructure requirements associated with the range of storage/recovery scenarios.
- Refinement of the water accounting framework to track the volume of groundwater stored, changes in the volume of groundwater storage, estimated volumes of basin losses and rejected recharge, the volume of groundwater recovered, and the volume of surface water forbearance.
- Implementation of contractual arrangements among the SGA, its member agencies, potential transfer partners, and others.
- Evaluation of environmental and permitting requirements for the range of storage/recovery scenarios.
- Evaluation of regulatory and institutional issues affecting the SGA and its member agencies.
- Continued development of the groundwater management program, including the groundwater monitoring network and the DMS.
- Evaluation of pricing methodologies for the transferable water.

- Stakeholder outreach and communication.

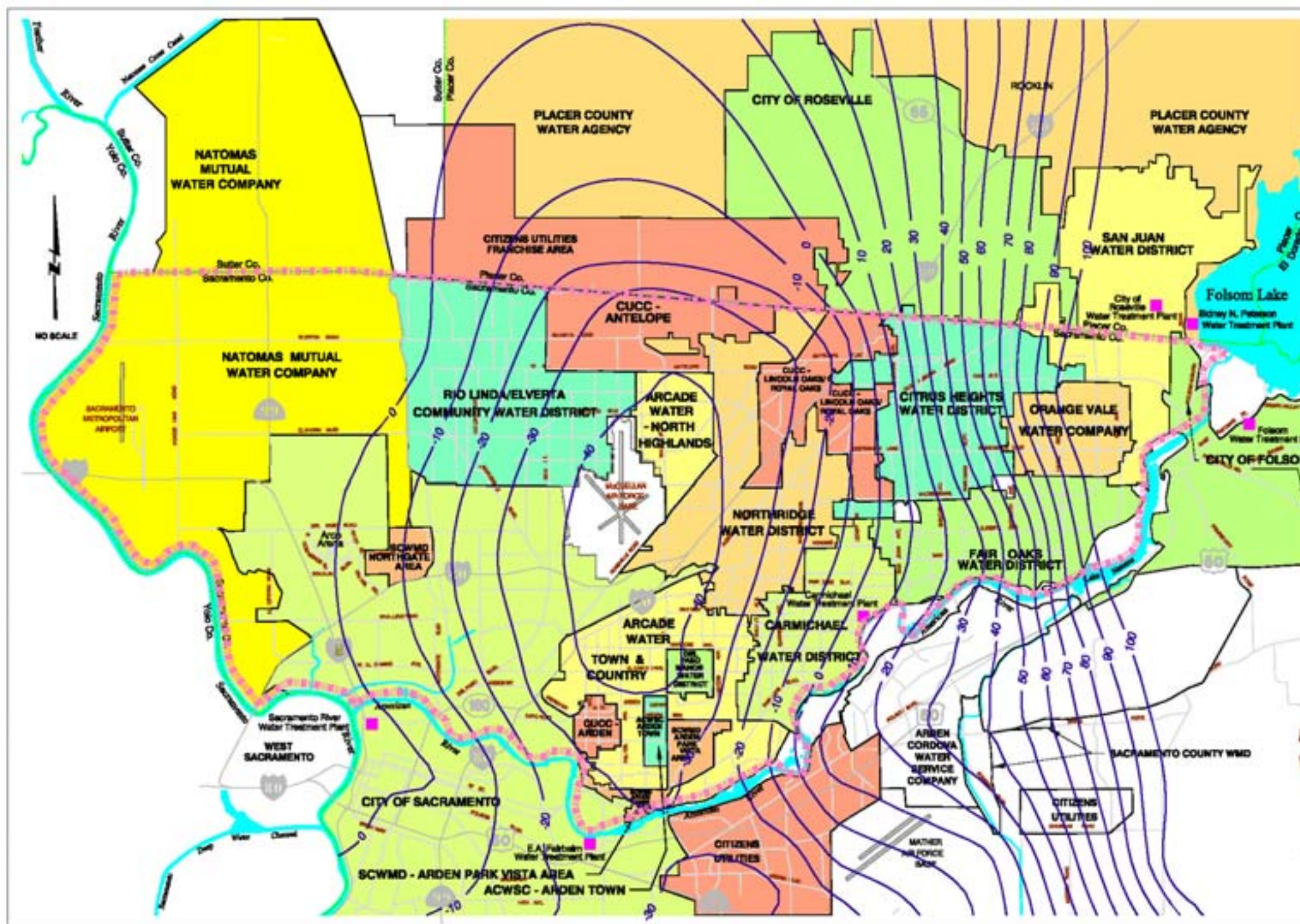
These tasks are scheduled for completion within the next several years. Design and construction are not included in the tasks listed above.

The short-term component could be implemented within the first 2 years of the long-term Program's timeframe. The tasks associated with each well and the extended pipeline are discussed below.

Design, construction, and operation of the Citrus Heights well, Fair Oaks well, and Walerga Pipeline extension would require completion of the following items:

- **Feasibility studies, conceptual design, pilot project, preliminary design**—These steps have already been completed through the RWMP and the agency's individual efforts.
- **Environmental Assessment/Initial Study (EA/IS)**—The Citrus Heights EA/IS would be based on the preliminary design and would confirm the potential impacts and required mitigations, if any, for the well. Fair Oaks and Northridge have already completed the necessary environmental documentation.
- **Final Design**—Following the EA/IS work, each agency would proceed with final design, focusing on the preferred alternative. This would involve producing engineering drawings, specification, and other final contract documents suitable to bid and construct the Project facilities.
- **Permitting**—Each agency would obtain the required permits using the final design as the basis for permitting requirements.
- **Construction**—Immediately following permitting, each agency would begin construction.
- **Operation and Monitoring**—Following construction, each agency would operate its facility as part of the short-term component. Through the groundwater management program, the basin's response to conjunctive use activities would be collected. This information would be incorporated into the continued operations of the short-term component and evolution of the long-term Program.



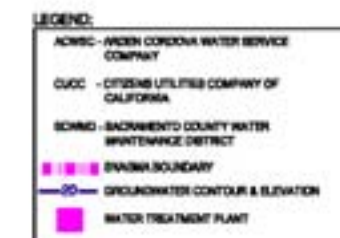


# **SACRAMENTO GROUNDWATER AUTHORITY**

## **PLATE 1**

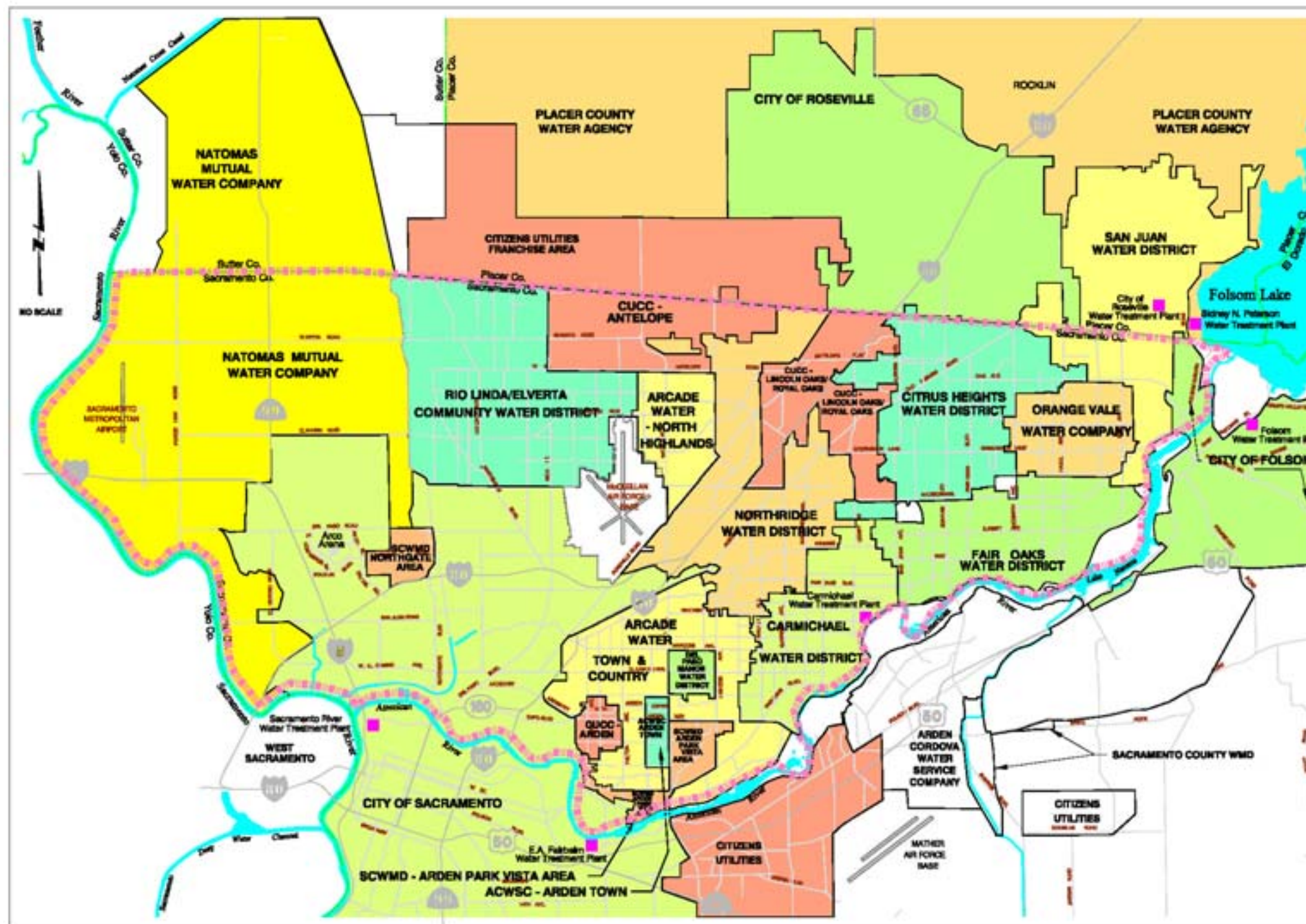
## **GROUNDWATER CONDITIONS FALL - 1996**

October 2001



**FIGURE 17A-1  
GROUNDWATER CONDITIONS FALL-1996**  
SGA CONJUNCTIVE USE PROGRAM  
SHORT-TERM PROJECT EVALUATIONS  
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





# **SACRAMENTO GROUNDWATER AUTHORITY**

## **PLATE 2**

## **LOCATIONS OF WATER PURVEYORS**

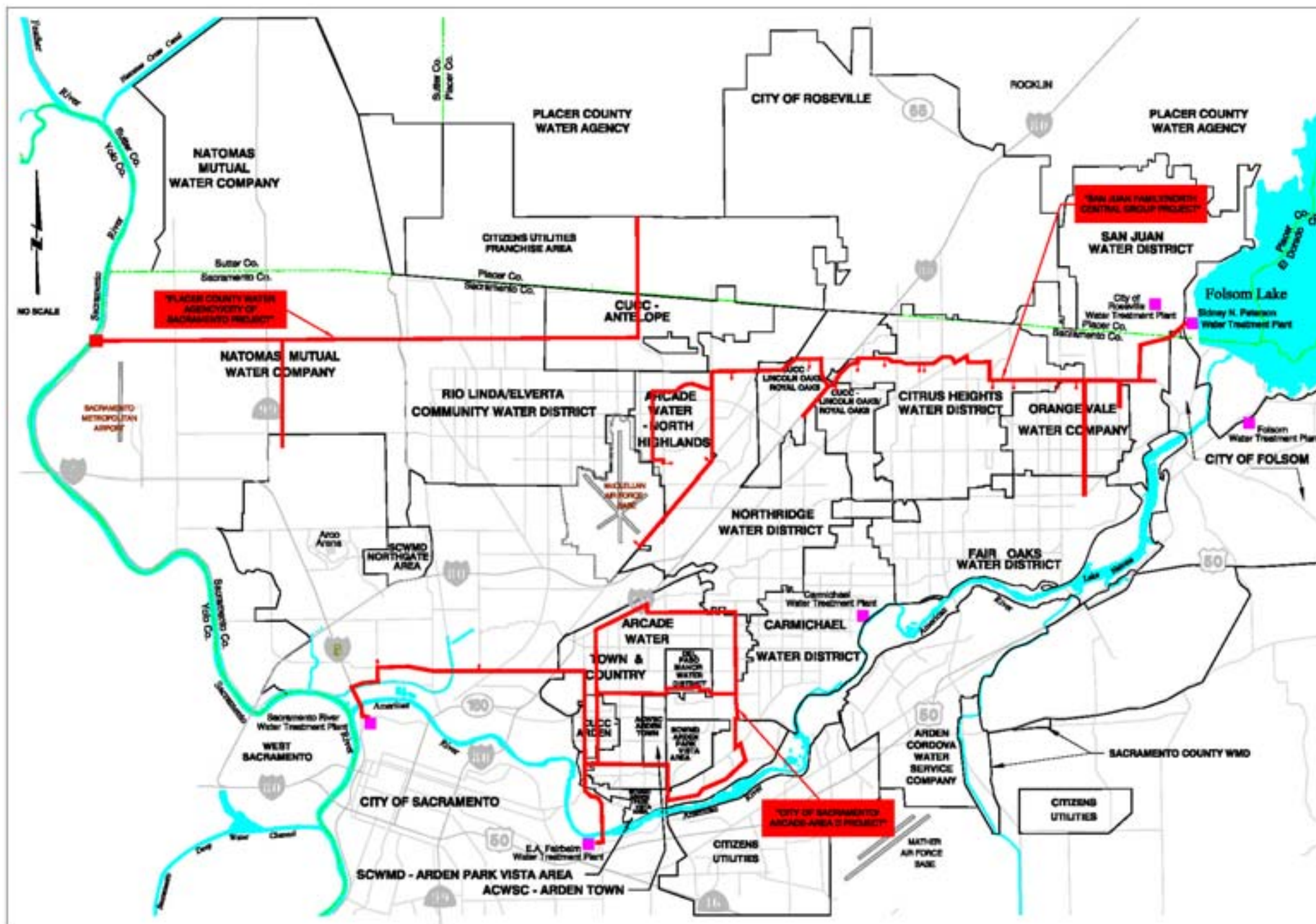
October 2001

**LEGEND:**

ACWSC - ARDEN CORDOVA WATER SERVICE COMPANY
CUCC - CITIZENS UTILITIES COMPANY OF CALIFORNIA
SCWMD - SACRAMENTO COUNTY WATER MAINTENANCE DISTRICT
--- SAGWA BOUNDARY
■ WATER TREATMENT PLANT

**FIGURE 17A-2**  
**LOCATIONS OF WATER PURVEYORS**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





# **SACRAMENTO GROUNDWATER AUTHORITY**

## **PLATE 3**

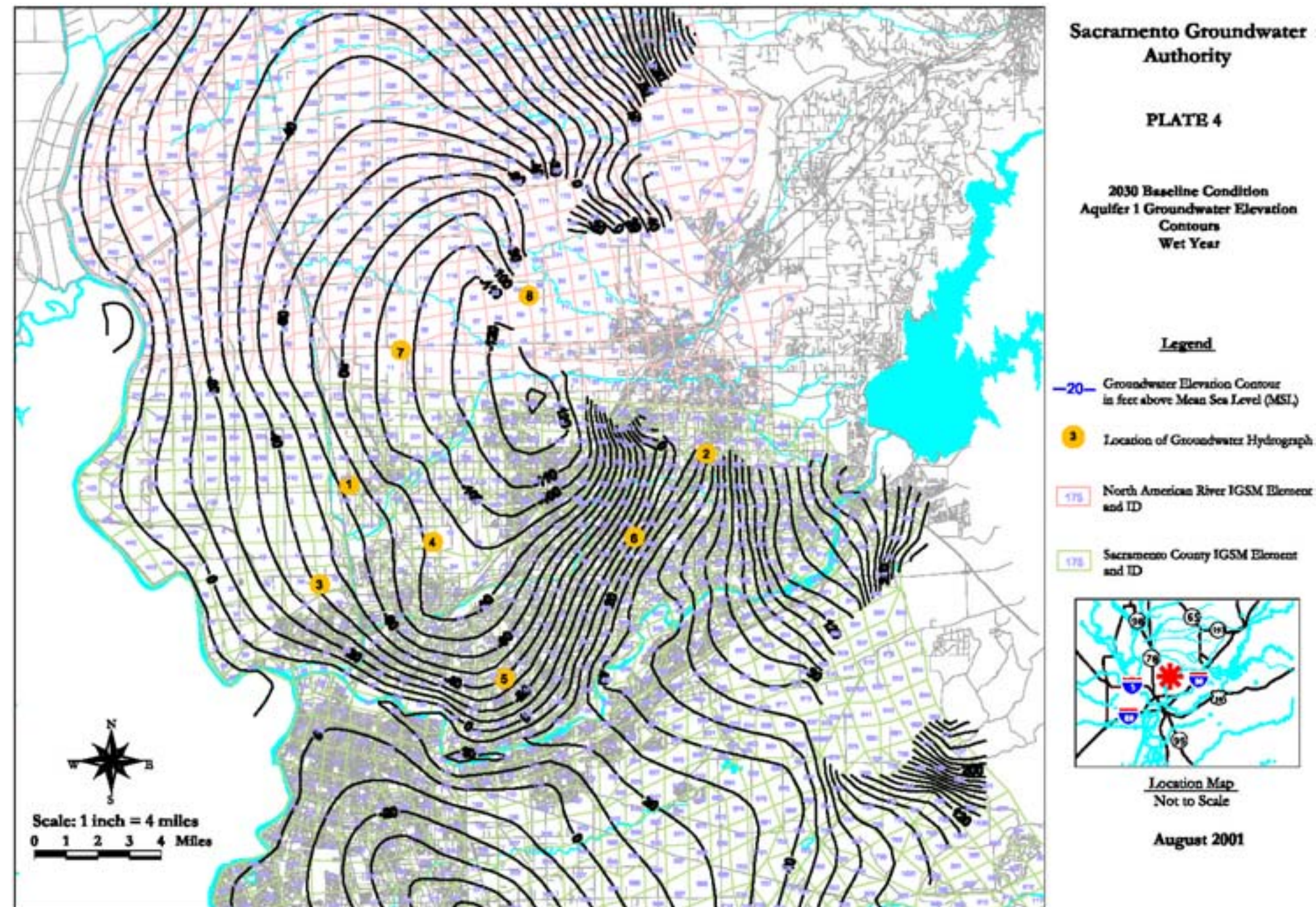
## **PROPOSED CONJUNCTIVE USE PROJECTS**

October 2001

LEGEND:	
ACWSC	ARDEN CORDOVA WATER SERVICE COMPANY
CUCO	CITIZENS UTILITIES COMPANY OF CALIFORNIA
SCWMD	SACRAMENTO COUNTY WATER MAINTENANCE DISTRICT

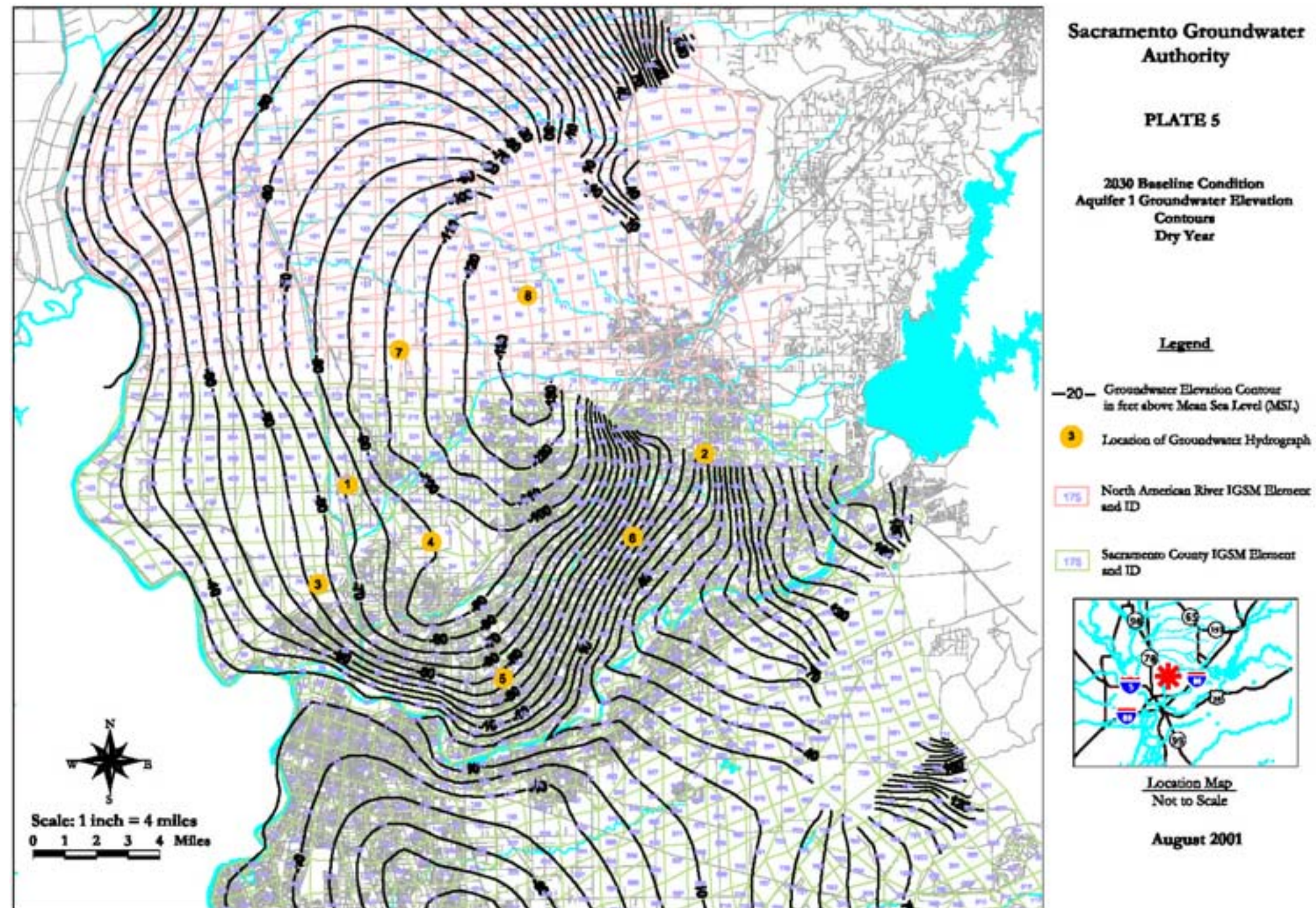
**FIGURE 17A-3  
PROPOSED CONJUNCTIVE USE PROJECTS**  
SGA CONJUNCTIVE USE PROGRAM  
SHORT-TERM PROJECT EVALUATIONS  
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





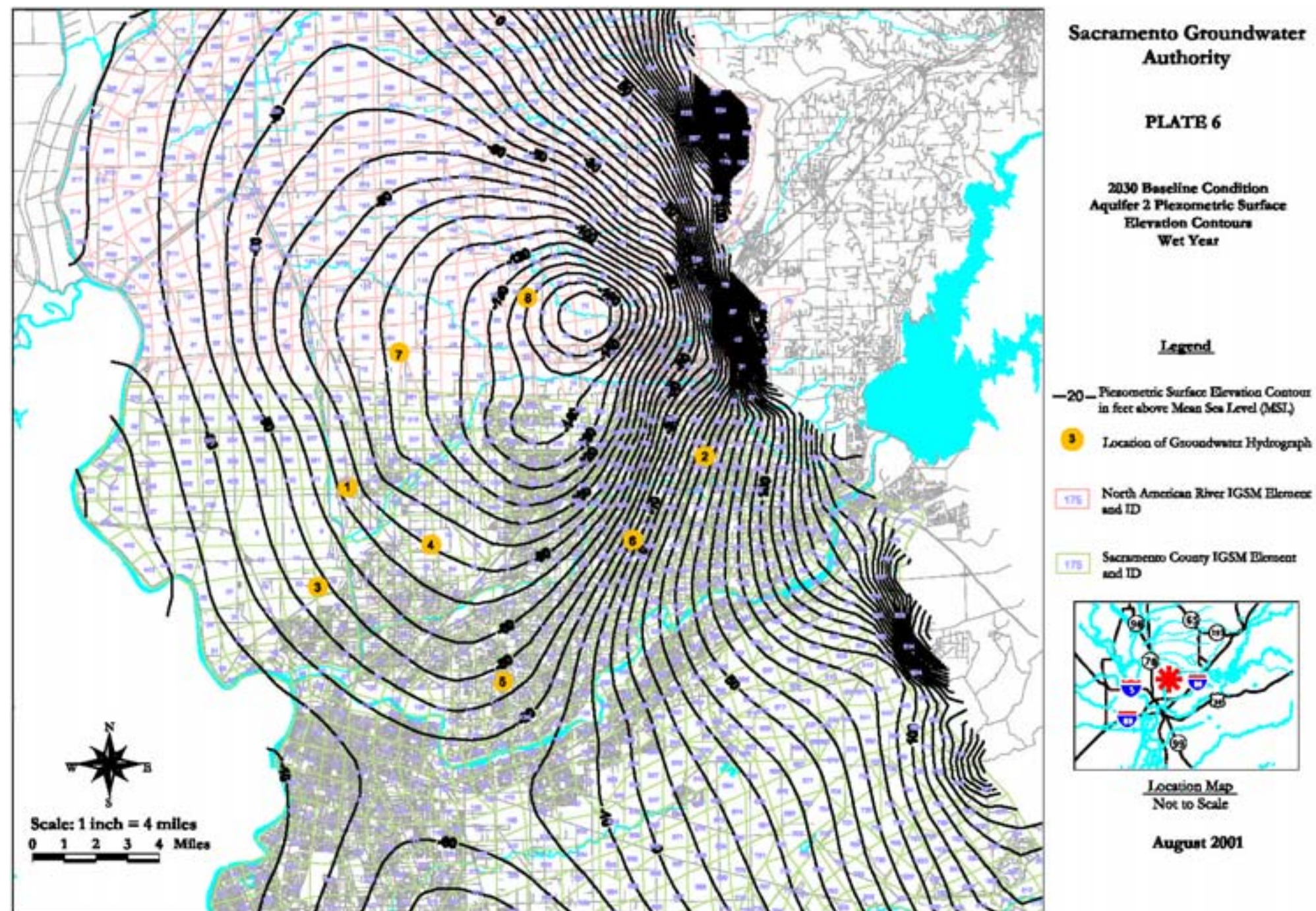
**FIGURE 17A-4**  
**2030 BASELINE CONDITION AQUIFER 1**  
**GROUNDWATER ELEVATION CONTOURS—WET YEAR**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





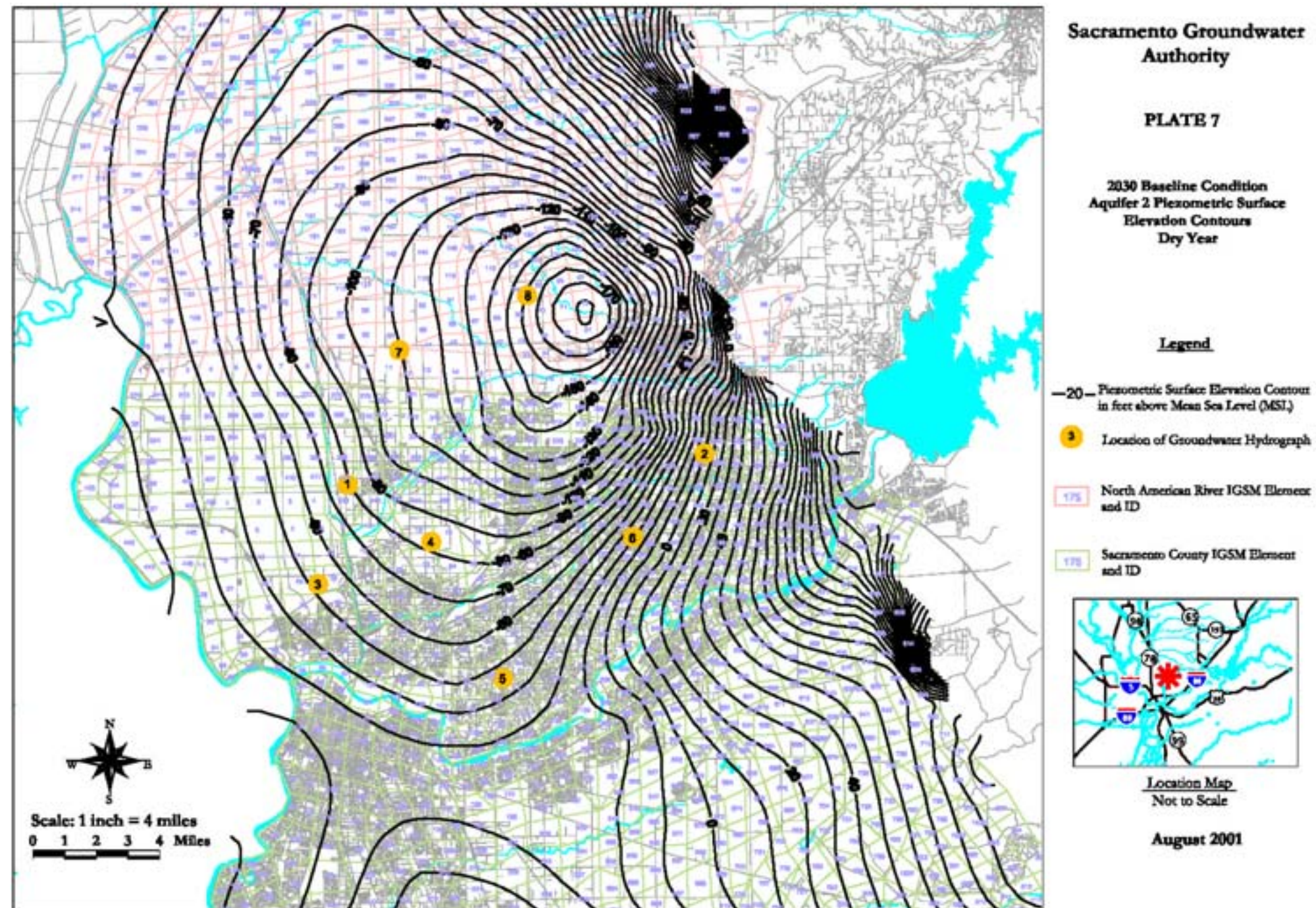
**FIGURE 17A-5**  
**2030 BASELINE CONDITIONS AQUIFER 1**  
**GROUNDWATER ELEVATION CONTOURS-DRY YEAR**  
SGA CONJUNCTIVE USE PROGRAM  
SHORT-TERM PROJECT EVALUATIONS  
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





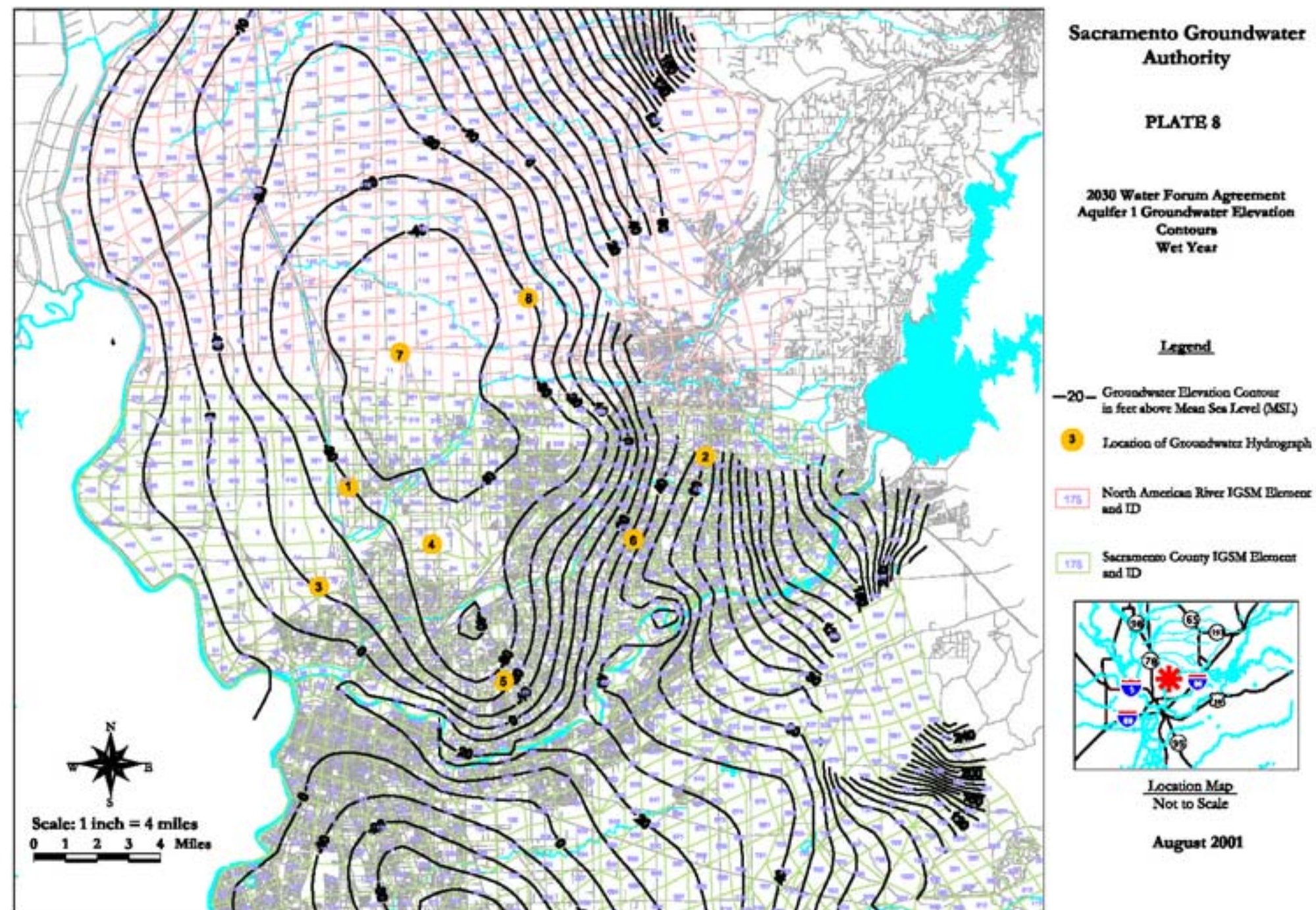
**FIGURE 17A-6**  
**2030 BASELINE CONDITION AQUIFER 2 PIEZOMETRIC**  
**SURFACE ELEVATION CONTOURS—WET YEAR**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





**FIGURE 17A-7**  
**2030 BASELINE CONDITION AQUIFER 2 PIEZOMETRIC**  
**SURFACE ELEVATION CONTOURS—DRY YEAR**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

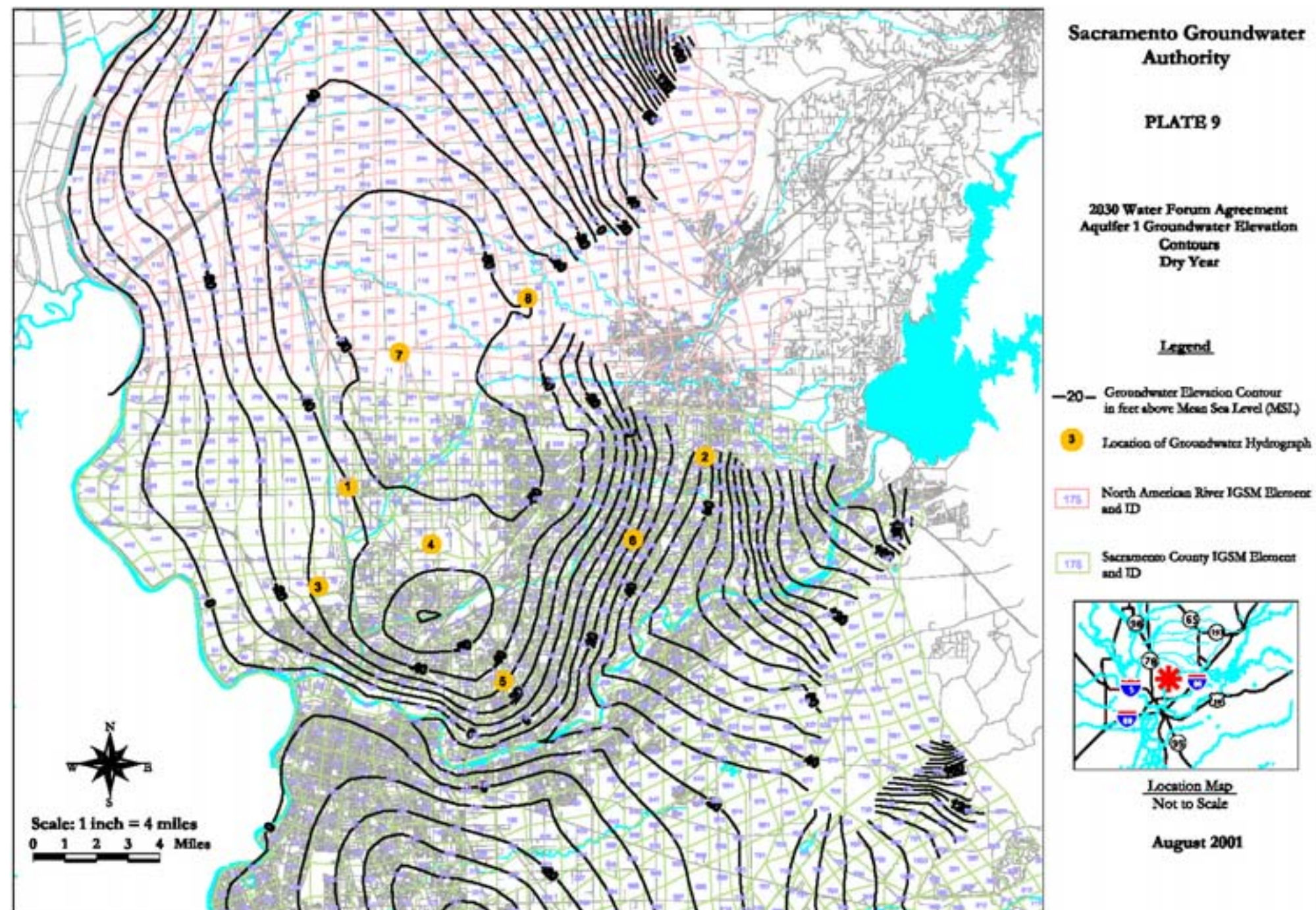




**FIGURE 17A-8**  
**2030 WATER FORUM AGREEMENT AQUIFER 1**  
**GROUNDWATER ELEVATION CONTOURS—WET YEAR**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

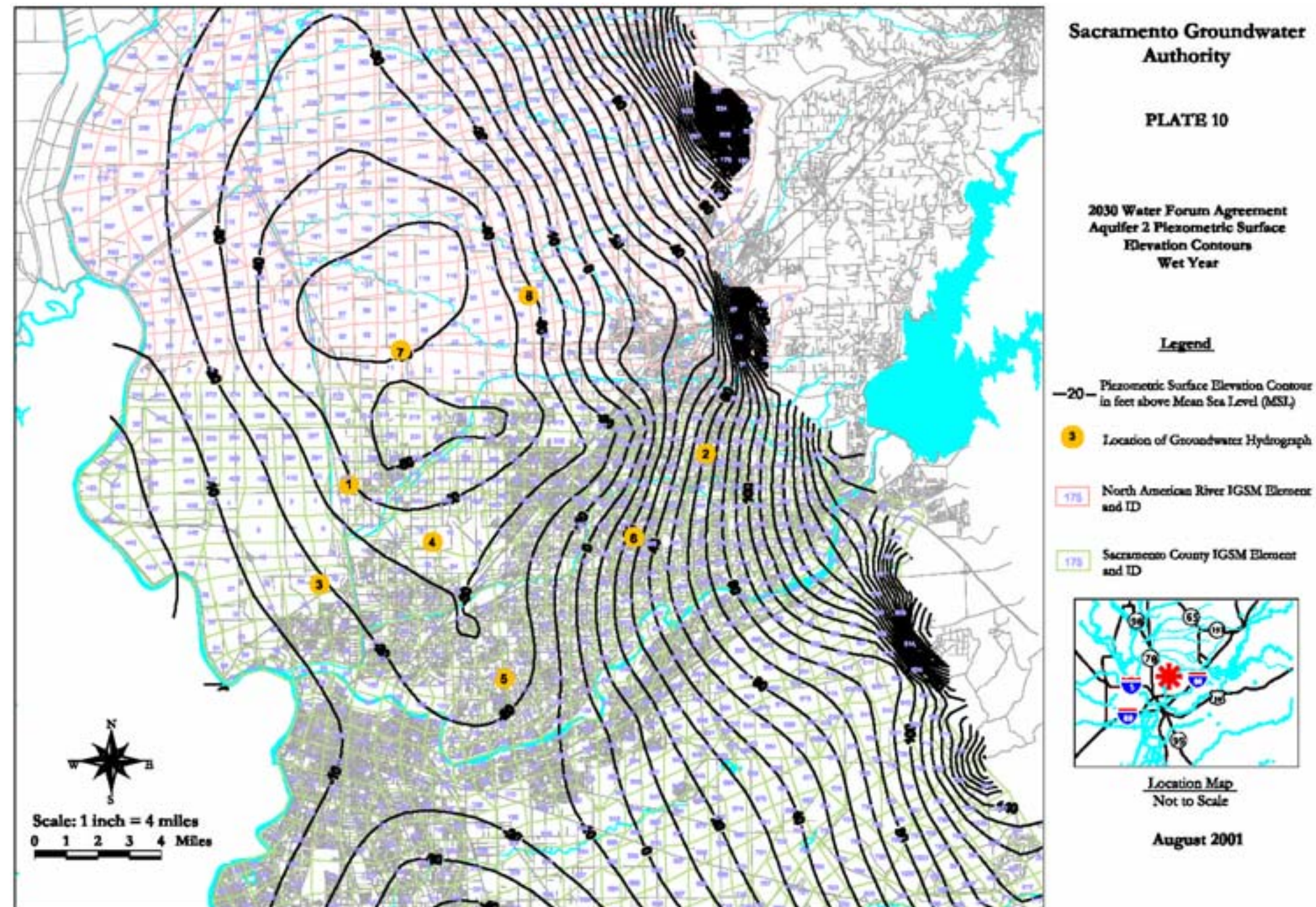
**CH2MHILL**  
 in association with  
 MONTGOMERY WATSON HARZA  
 MBK  
 SWRI





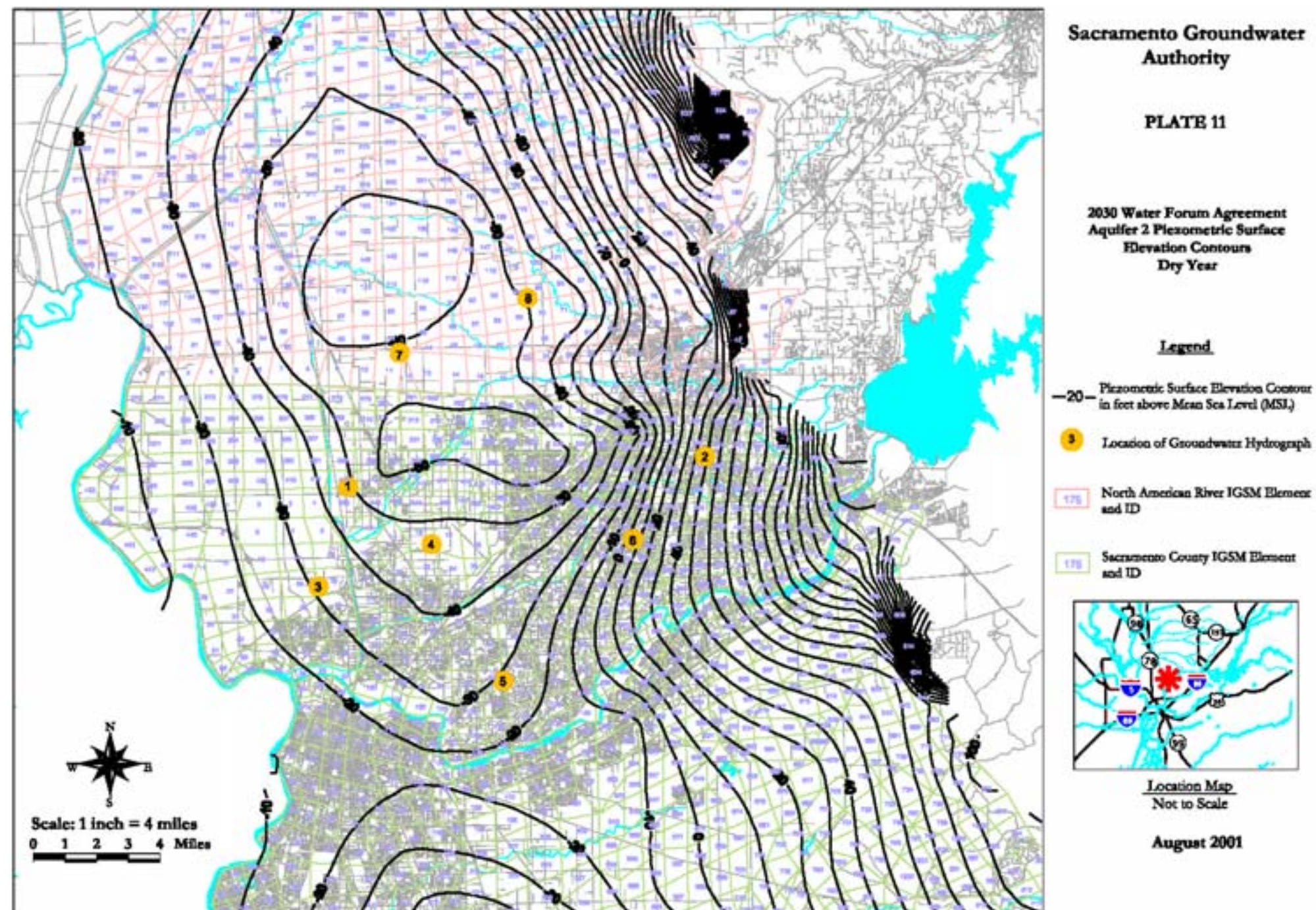
**FIGURE 17A-9**  
**2030 WATER FORUM AGREEMENT AQUIFER 1**  
**GROUNDWATER ELEVATION CONTOURS-DRY YEAR**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





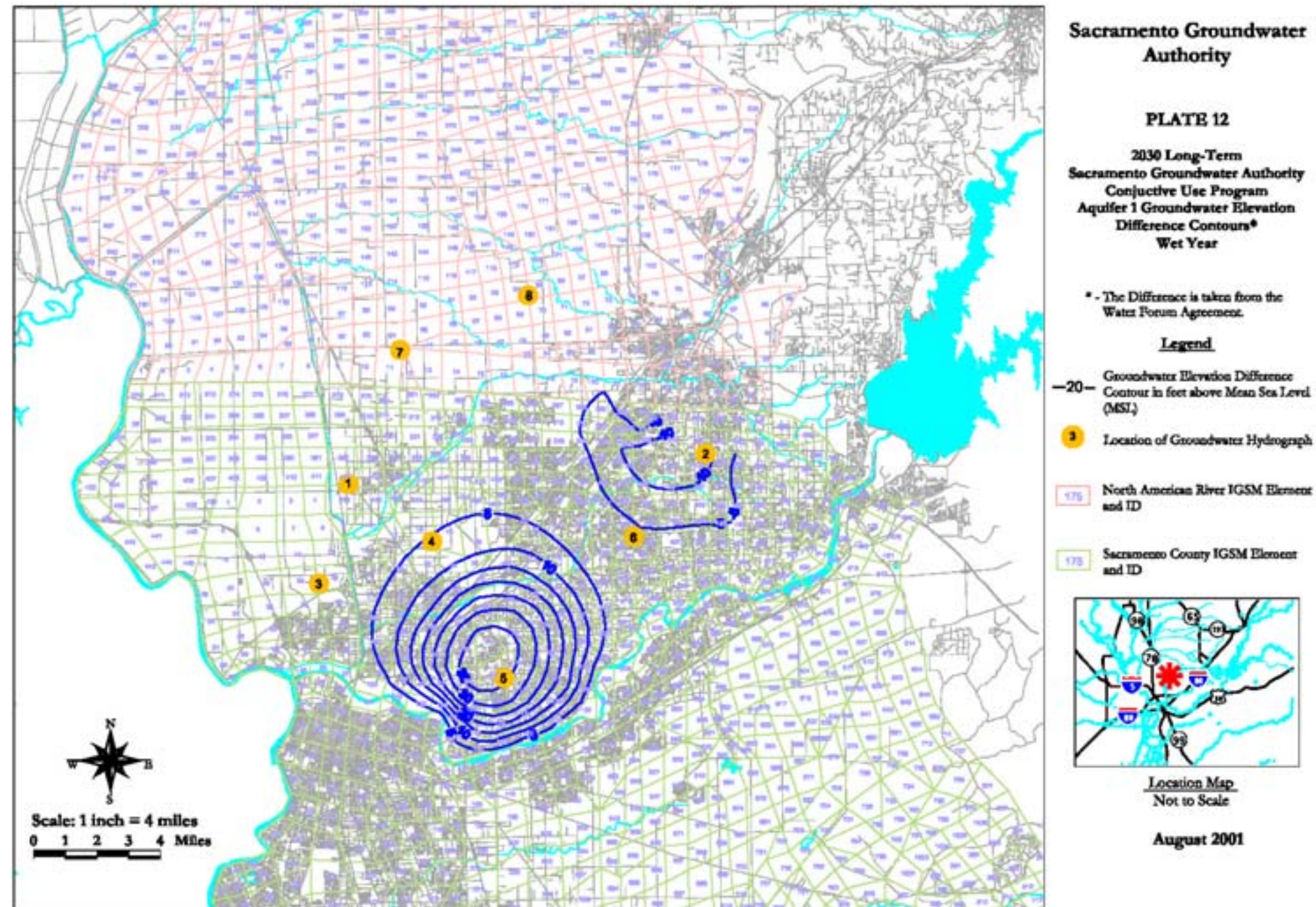
**FIGURE 17A-10**  
**2030 WATER FORUM AGREEMENT AQUIFER 2 PIEZOMETRIC**  
**SURFACE ELEVATION CONTOURS—WET YEAR**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT



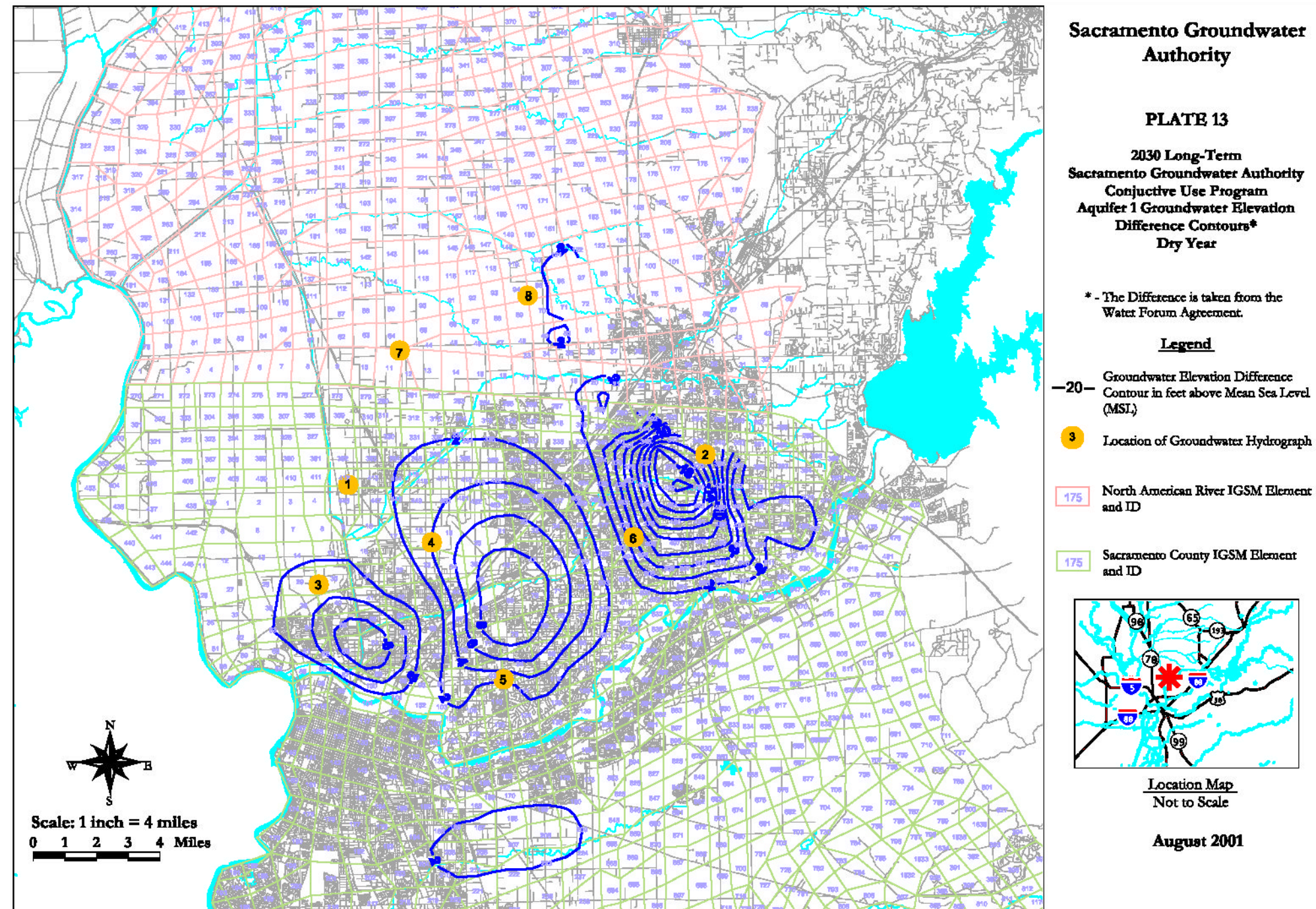


**FIGURE 17A-11**  
**2030 WATER FORUM AGREEMENT AQUIFER 2 PIEZOMETRIC**  
**SURFACE ELEVATION CONTOURS—DRY YEAR**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT



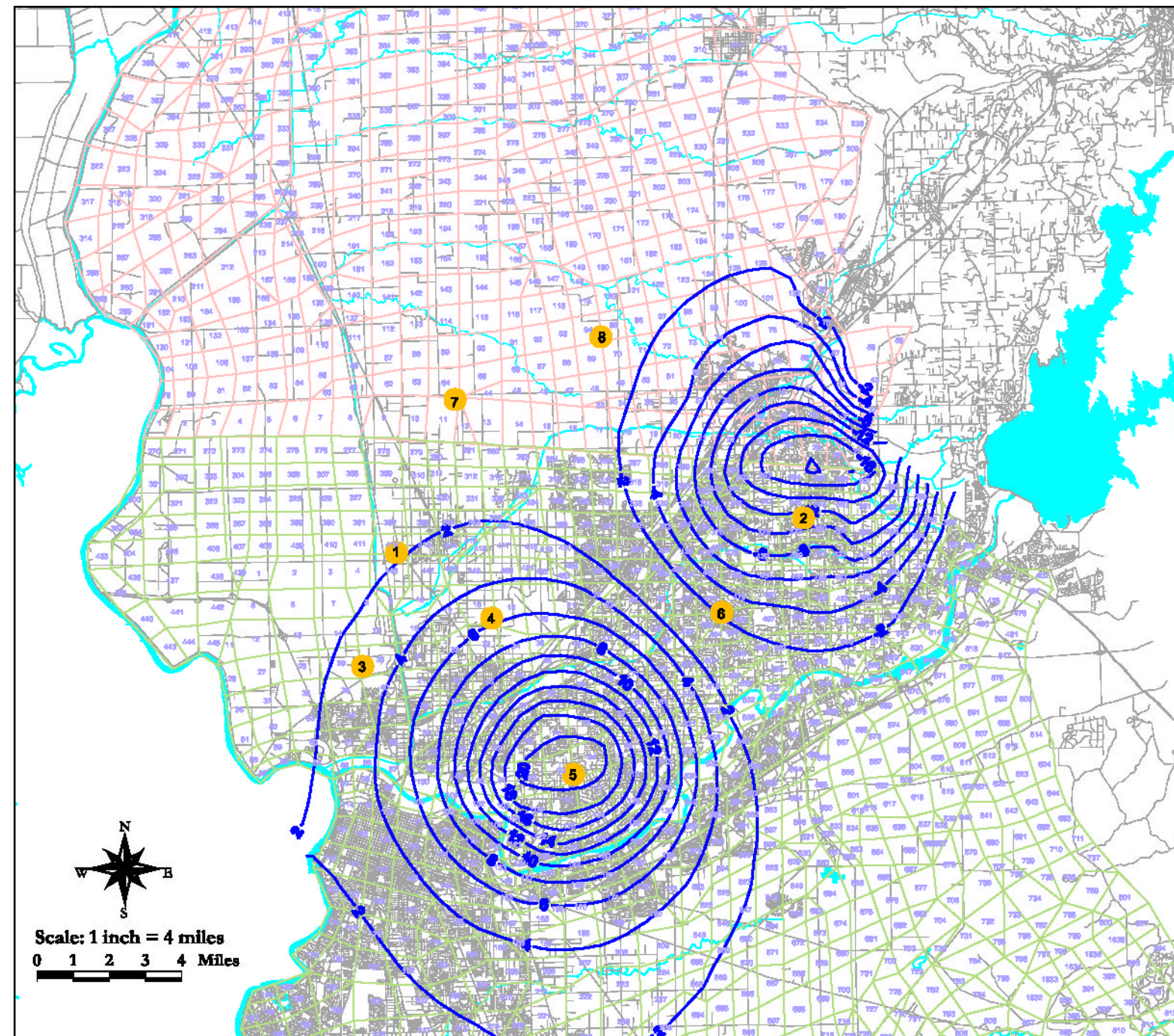






**FIGURE 17A-13**  
**2030 LONG-TERM SACRAMENTO GROUNDWATER AUTHORITY**  
**CONJUNCTIVE USE PROGRAM AQUIFER 1 GROUNDWATER**  
**ELEVATION DIFFERENCE CONTOURS—DRY YEAR**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





# **Sacramento Groundwater Authority**

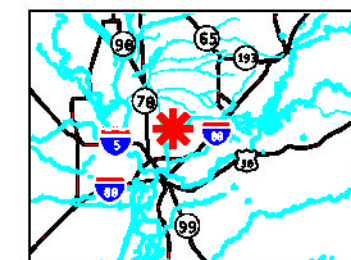
## **PLATE 14**

### **2030 Long-Term Sacramento Groundwater Authority Conjunctive Use Program Aquifer 2 Piezometric Surface Elevation Difference Contours\* Wet Year**

\* - The Difference is taken from the Water Forum Agreement.

#### **Legend**

- 20— Piezometric Surface Elevation Difference Contour in feet above Mean Sea Level (MSL)
- 3 Location of Groundwater Hydrograph
- 175 North American River IGSM Element and ID
- 175 Sacramento County IGSM Element and ID

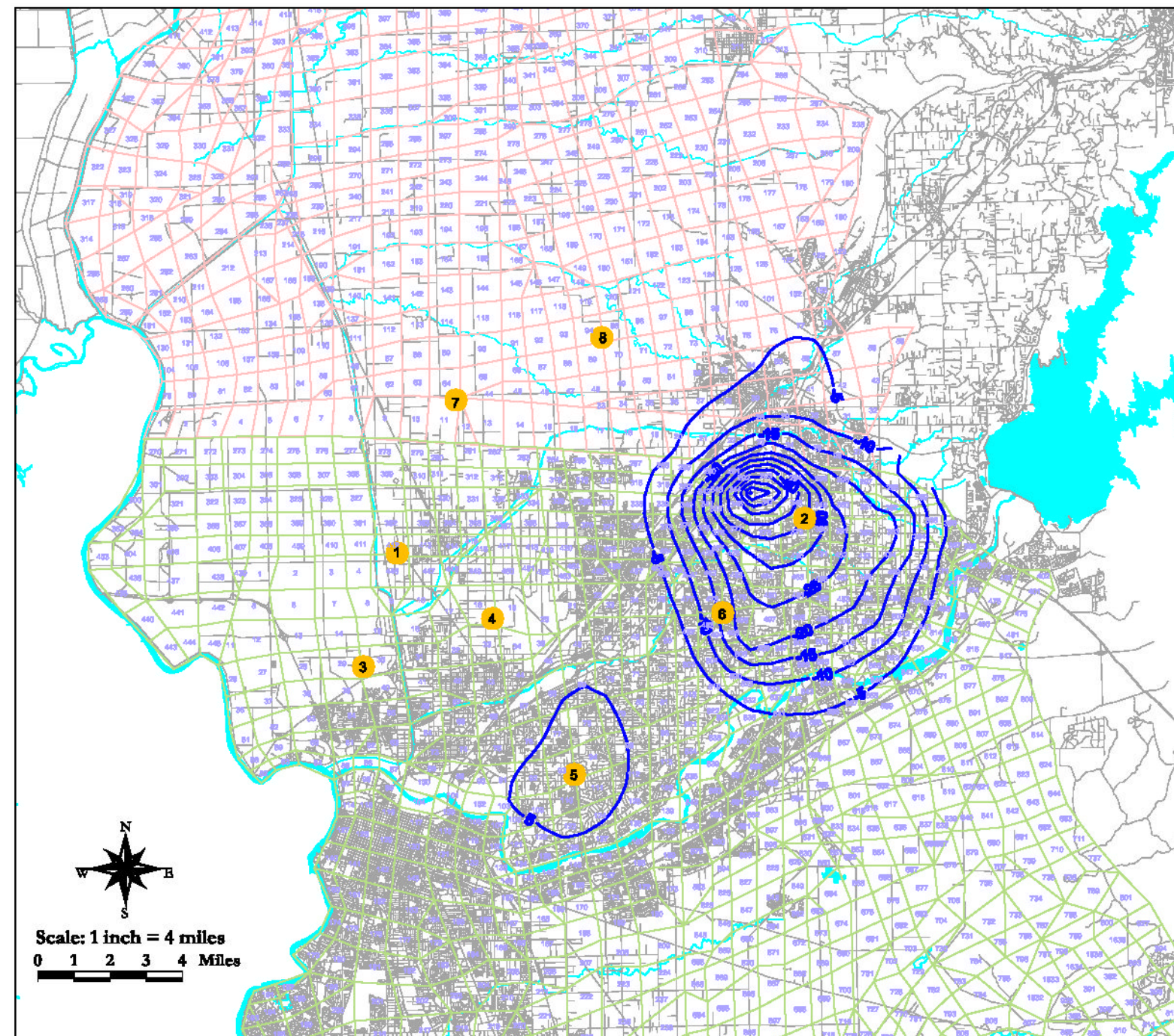


Location Map  
Not to Scale

August 2001

**FIGURE 17A-14**  
**2030 LONG-TERM SACRAMENTO GROUNDWATER AUTHORITY**  
**CONJUNCTIVE USE PROGRAM AQUIFER 2 PIEZOMETRIC SURFACE**  
**ELEVATION DIFFERENCE CONTOURS—WET YEAR**  
SGA CONJUNCTIVE USE PROGRAM  
SHORT-TERM PROJECT EVALUATIONS  
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





# **Sacramento Groundwater Authority**

## **PLATE 15**

### **2030 Long-Term Sacramento Groundwater Authority Conjunctive Use Program Aquifer 2 Piezometric Surface Elevation Difference Contours\* Dry Year**

\* - The Difference is taken from the Water Forum Agreement.

#### **Legend**

- 20— Piezometric Surface Elevation Difference Contour in feet above Mean Sea Level (MSL)
- 3 Location of Groundwater Hydrograph
- 175 North American River IGSM Element and ID
- 175 Sacramento County IGSM Element and ID



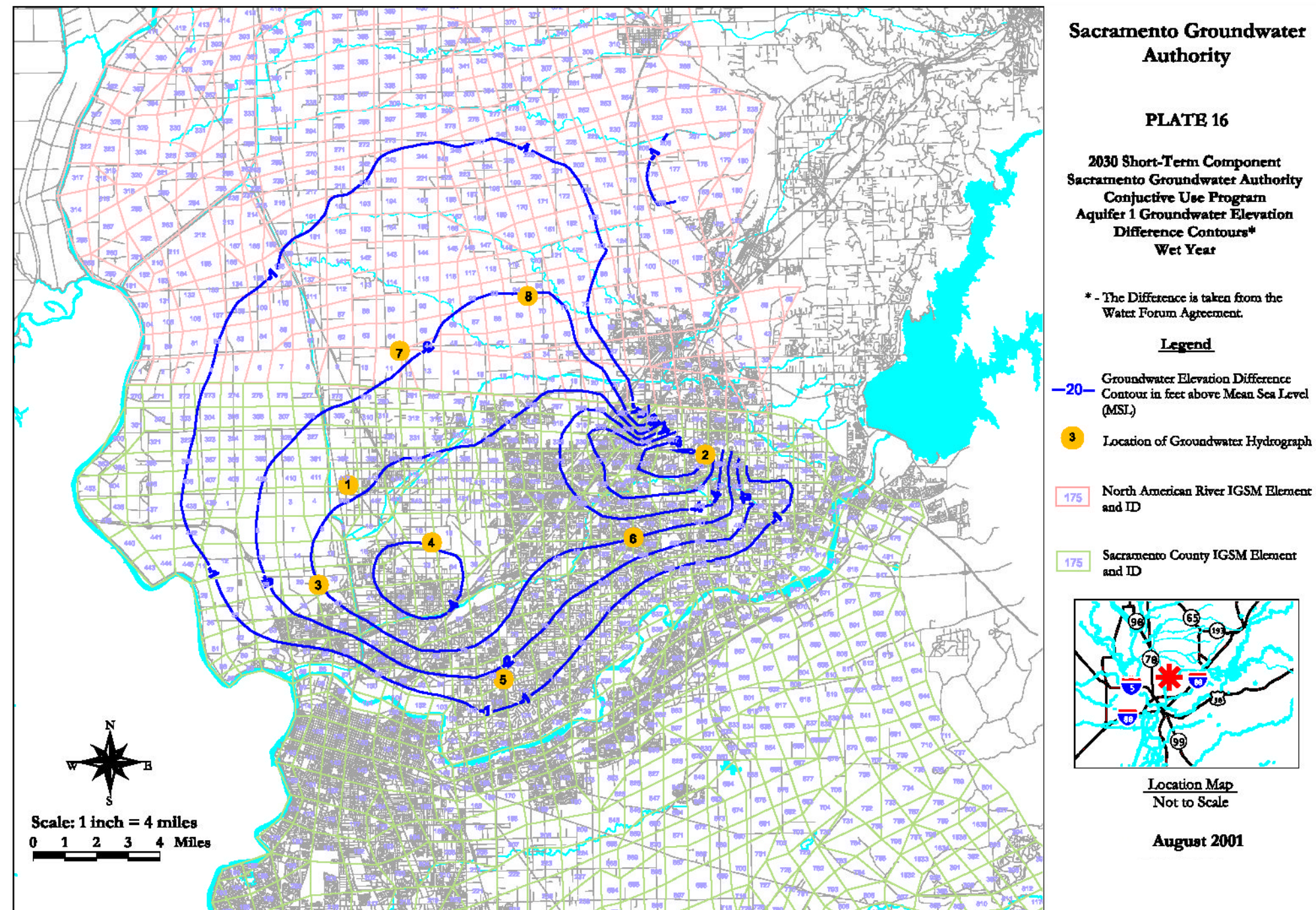
**Location Map**  
Not to Scale

**August 2001**

**FIGURE 17A-15  
2030 LONG-TERM SACRAMENTO GROUNDWATER AUTHORITY  
CONJUNCTIVE USE PROGRAM AQUIFER 2 PIEZOMETRIC SURFACE  
ELEVATION DIFFERENCE CONTOURS—DRY YEAR**  
SGA CONJUNCTIVE USE PROGRAM  
SHORT-TERM PROJECT EVALUATIONS  
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT

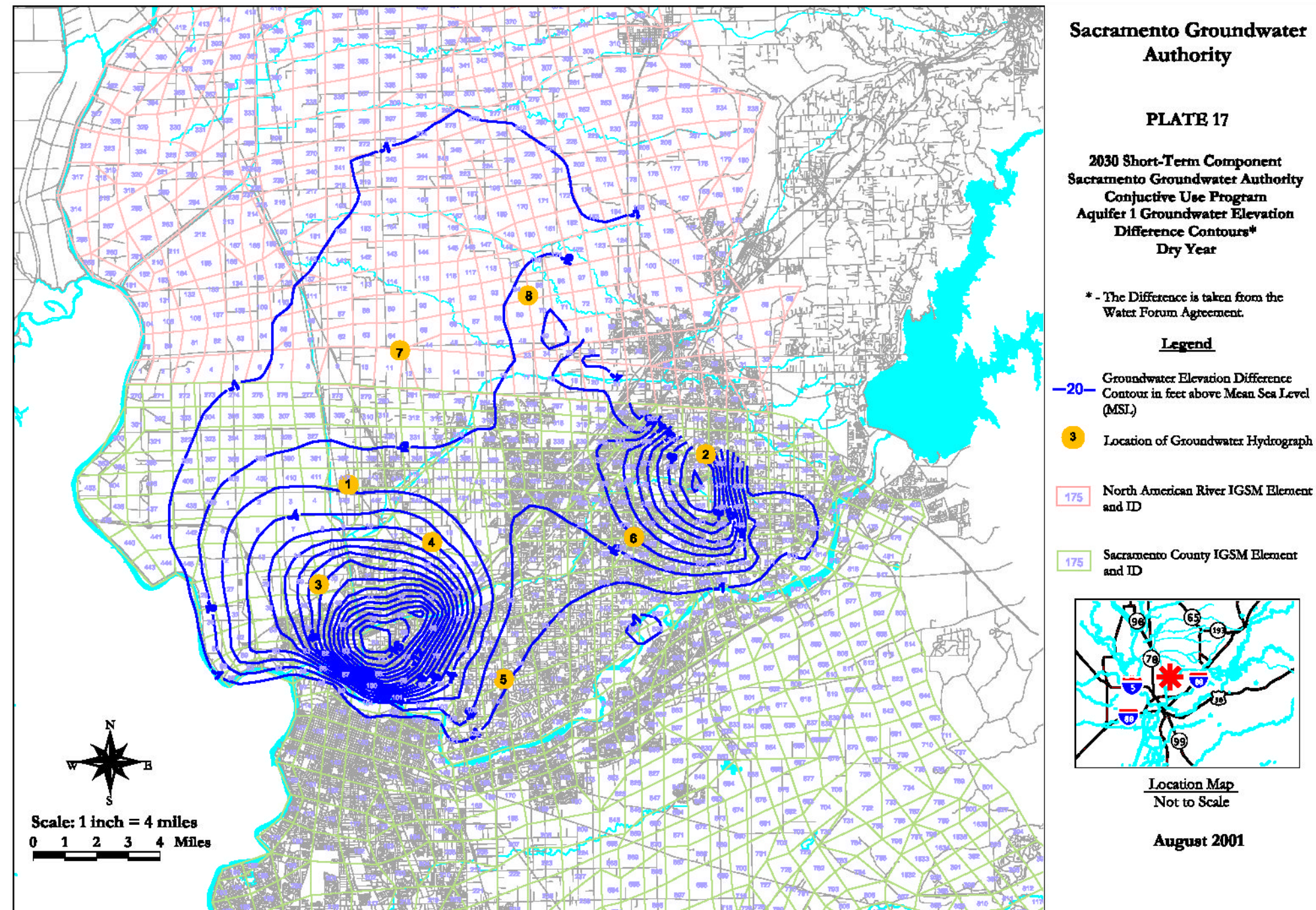
**CH2MHILL**  
in association with  
**MONTGOMERY WATSON HARZA**  
**MBK**  
**SWRI**





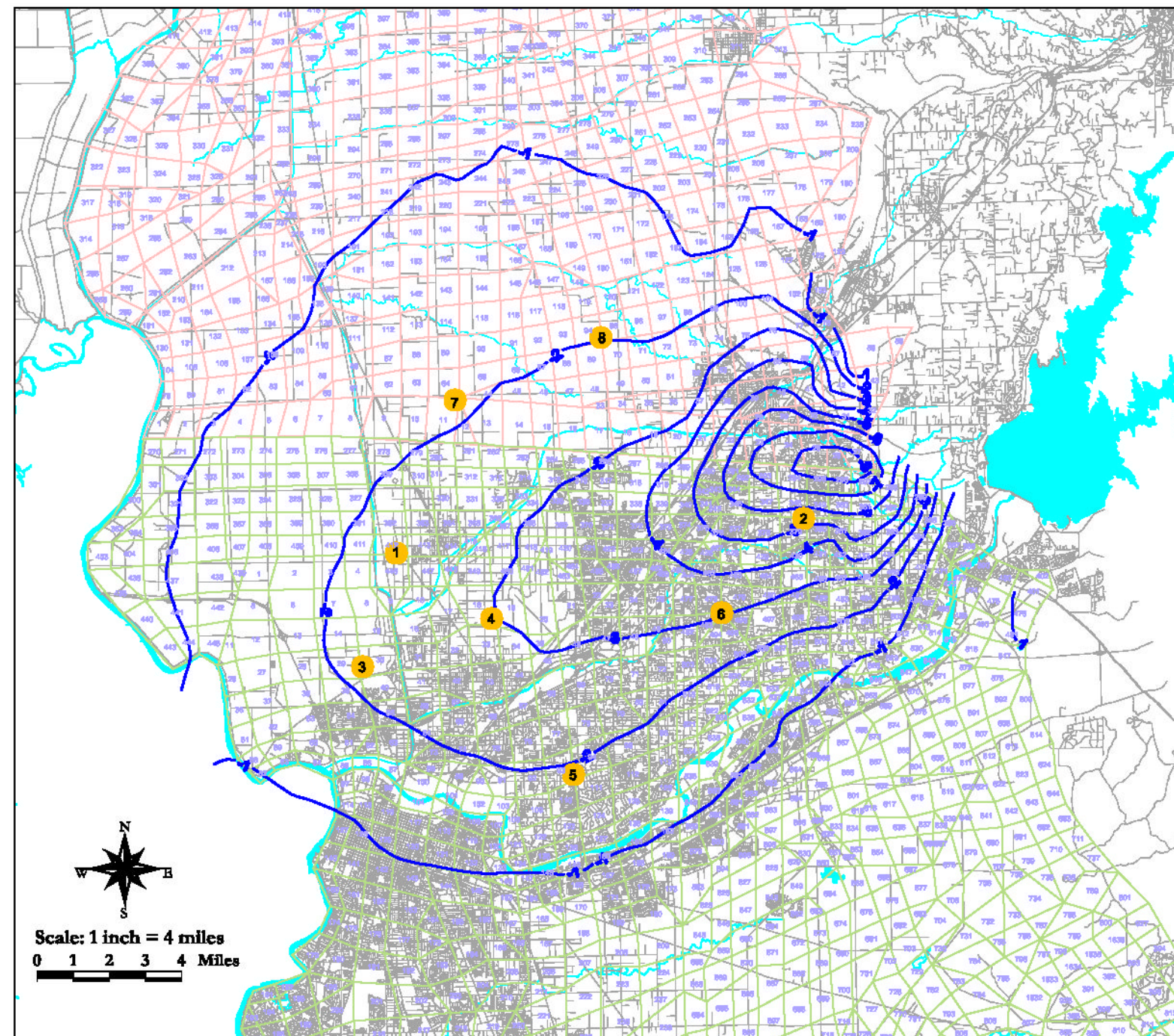
**FIGURE 17A-16**  
**2030 SHORT-TERM COMPONENT SACRAMENTO GROUNDWATER AUTHORITY**  
**CONJUNCTIVE USE PROGRAM AQUIFER 1 GROUNDWATER**  
**ELEVATION DIFFERENCE CONTOURS—WET YEAR**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





**FIGURE 17A-17**  
**2030 SHORT-TERM COMPONENT SACRAMENTO GROUNDWATER AUTHORITY**  
**CONJUNCTIVE USE PROGRAM AQUIFER 1 GROUNDWATER**  
**ELEVATION DIFFERENCE CONTOURS-DRY YEAR**  
 SGA CONJUNCTIVE USE PROGRAM  
 SHORT-TERM PROJECT EVALUATIONS  
 SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT





# **Sacramento Groundwater Authority**

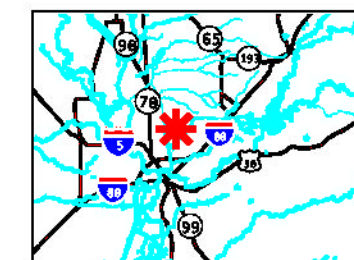
## **PLATE 18**

### **2030 Short-Term Component Sacramento Groundwater Authority Conjunctive Use Program Aquifer 2 Piezometric Surface Elevation Difference Contours\* Wet Year**

\* - The Difference is taken from the Water Forum Agreement.

#### **Legend**

- 20— Piezometric Surface Elevation Difference Contour in feet above Mean Sea Level (MSL)
- 3 Location of Groundwater Hydrograph
- 175 North American River IGSM Element and ID
- 175 Sacramento County IGSM Element and ID

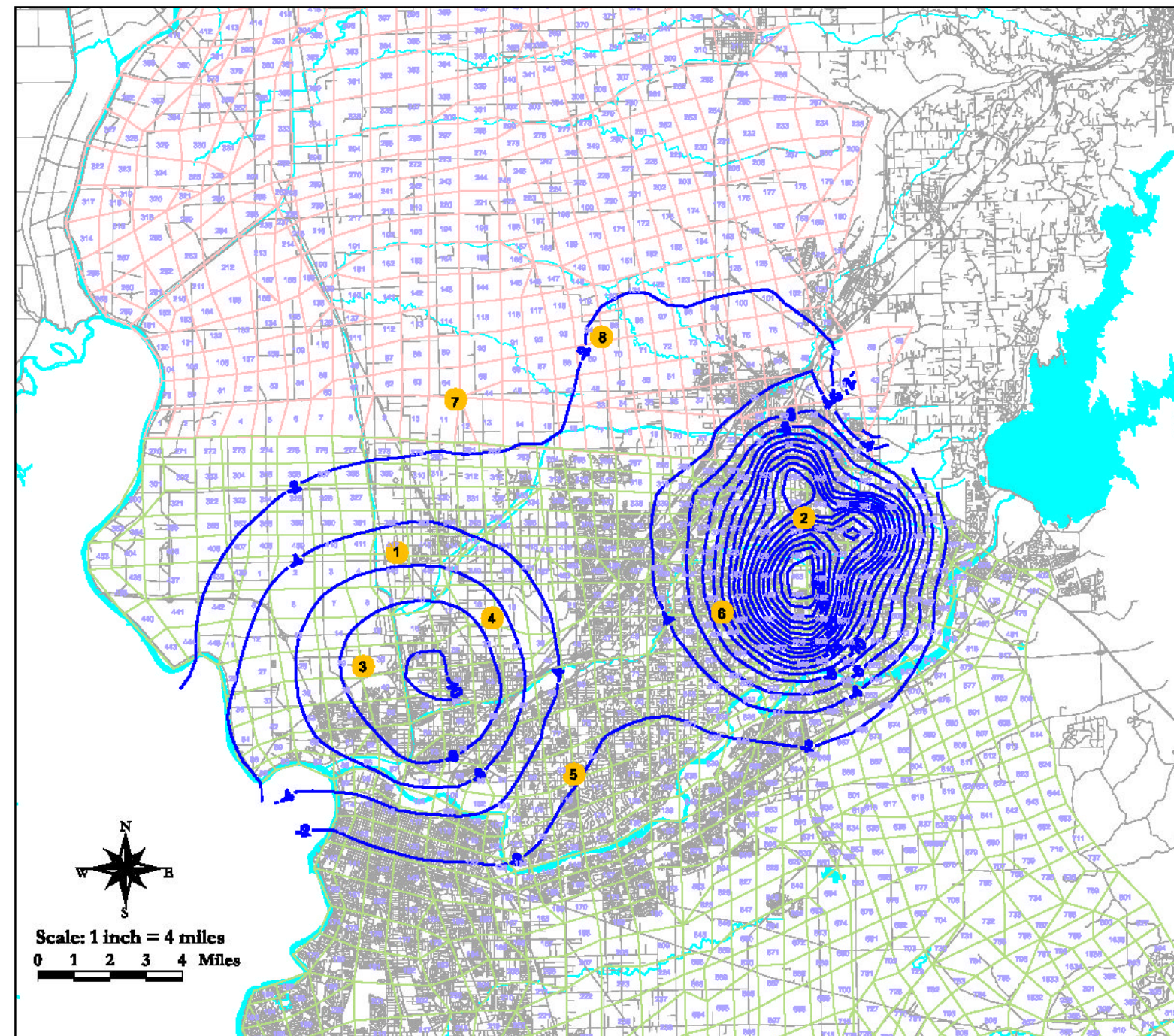


**Location Map**  
Not to Scale

**August 2001**

**FIGURE 17A-18  
2030 SHORT-TERM COMPONENT SACRAMENTO GROUNDWATER AUTHORITY  
CONJUNCTIVE USE PROGRAM AQUIFER 2 PIEZOMETRIC SURFACE  
ELEVATION DIFFERENCE CONTOURS—WET YEAR  
SGA CONJUNCTIVE USE PROGRAM  
SHORT-TERM PROJECT EVALUATIONS  
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT**





# **Sacramento Groundwater Authority**

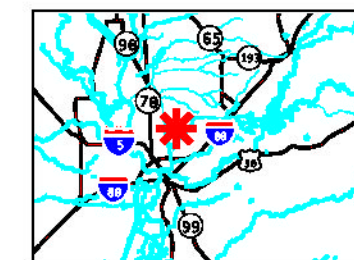
## **PLATE 19**

### **2030 Short-Term Component Sacramento Groundwater Authority Conjunctive Use Program Aquifer 2 Piezometric Surface Elevation Difference Contours\* Dry Year**

\* - The Difference is taken from the Water Forum Agreement.

#### **Legend**

- 20— Piezometric Surface Elevation Difference Contour in feet above Mean Sea Level (MSL)
- 3 Location of Groundwater Hydrograph
- 175 North American River IGSM Element and ID
- 175 Sacramento County IGSM Element and ID



**Location Map**  
Not to Scale

**August 2001**

**FIGURE 17A-19  
2030 SHORT-TERM COMPONENT SACRAMENTO GROUNDWATER AUTHORITY  
CONJUNCTIVE USE PROGRAM AQUIFER 2 PIEZOMETRIC SURFACE  
ELEVATION DIFFERENCE CONTOURS-DRY YEAR**  
SGA CONJUNCTIVE USE PROGRAM  
SHORT-TERM PROJECT EVALUATIONS  
SACRAMENTO VALLEY WATER MANAGEMENT AGREEMENT



**Project 17A—Draft CEQA  
Environmental Checklist**

---

## Project 17A—Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist on the following pages.

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Aesthetics                    | <input type="checkbox"/> Agriculture Resources              | <input type="checkbox"/> Air Quality            |
| <input type="checkbox"/> Biological Resources          | <input type="checkbox"/> Cultural Resources                 | <input type="checkbox"/> Geology/Soils          |
| <input type="checkbox"/> Hazards & Hazardous Materials | <input checked="" type="checkbox"/> Hydrology/Water Quality | <input type="checkbox"/> Land Use/Planning      |
| <input type="checkbox"/> Mineral Resources             | <input type="checkbox"/> Noise                              | <input type="checkbox"/> Population/Housing     |
| <input type="checkbox"/> Public Services               | <input type="checkbox"/> Recreation                         | <input type="checkbox"/> Transportation/Traffic |
| <input type="checkbox"/> Utilities/Service Systems     | <input type="checkbox"/> Mandatory Findings of Significance |   |

## Determination:

(To be completed by the Lead Agency)

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
For

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
<u>I. AESTHETICS</u> —Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Short-term impacts from increased noise and dust emissions could occur as a result of construction. Mitigation measures implemented for noise and air quality would reduce any impacts to a less than significant level.</i>				
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>II. AGRICULTURE RESOURCES</u> —Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>III. AIR QUALITY</u> —Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Increased air emissions could result from construction of the project. Implementation of Best Management practices (BMP's) during construction will reduce the amount of emissions, and reduce the impact to a level of less than significant.</i>				
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
<u>IV. BIOLOGICAL RESOURCES</u> —Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act, (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or, impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>V. CULTURAL RESOURCES</u> —Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>A significant impact would occur if a cultural resource were to be disturbed by activities associated with project development. In the event that an archaeological resource was discovered, appropriate measures would be undertaken to minimize any impacts.</i>				
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>See response to V (a) above.</i>				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>See response to V (a) above.</i>				
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>See response to V (a) above.</i>				
<u>VI. GEOLOGY AND SOILS</u> —Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>VII. HAZARDS AND HAZARDOUS MATERIALS—</b>				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>Construction equipment would require the use of potentially hazardous materials. The potential for significant hazardous material spill would be unlikely because of the limited amount of such materials that would be used onsite. If a spill or release of such materials were to occur, it could potentially be significant unless best management practices (BMPs) were implemented.</i>				
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>VIII. HYDROLOGY AND WATER QUALITY—</b>				
Would the project:				
a) Violate any water quality standards or waste discharge requirements? <i>There is a potential for an increase of erosion and sedimentation from construction of the 36-inch pipeline. Mitigation measures would include the implementation of BMPs to reduce any impacts to waterways in and around the project area.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).  <i>There are serious concerns about the long-term draw-down of the groundwater table and land subsidence, particularly in dry years. Model development would help in determining the effects of increased groundwater pumping. The impact that groundwater withdrawal would have on existing groundwater supplies is as yet undetermined; however, it is potentially significant because of the complexity of the issue.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>IX. LAND USE AND PLANNING</b> —Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Short-term impacts from increased noise and dust emissions could occur as a result of construction. Mitigation measures implemented for noise and air quality would reduce any impacts to a less than significant level.</i>				
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>X. MINERAL RESOURCES</b> —Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>XI. NOISE</b> —Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Short-term noise levels are expected to increase for the duration of construction. These noise increases would be temporary, and mitigation measures would be implemented to reduce any impact to a less than significant level.</i>				
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>See response to XI (a) above.</i>				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>XII. POPULATION AND HOUSING—Would the project:</u>				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>XIII. PUBLIC SERVICES—Would the project:</u>				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>XIV. RECREATION—Would the project:</u>				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
<u>XV. TRANSPORTATION/TRAFFIC</u> —Would the project:				
a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Result in inadequate parking capacity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>XVI. UTILITIES AND SERVICE SYSTEMS</u> —				
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Issues:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
<u>XVII. MANDATORY FINDINGS OF SIGNIFICANCE</u>				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>